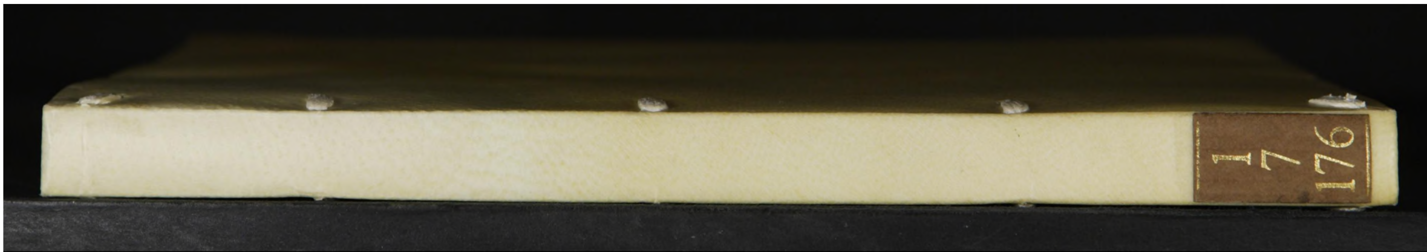
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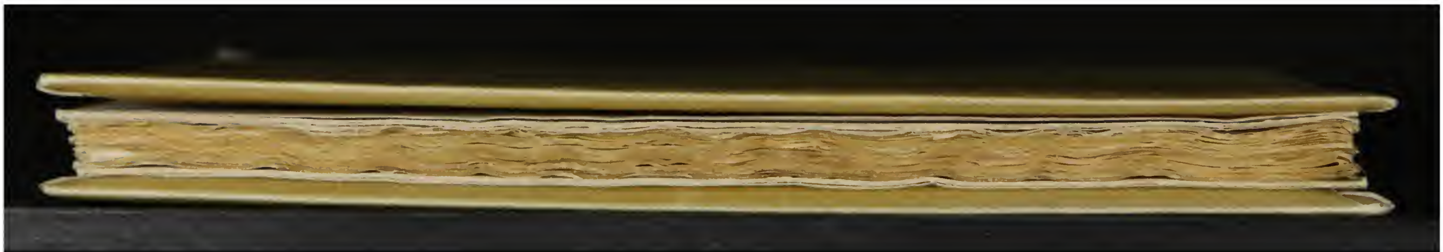


X I

PORT. Elem.

Curvil.

IO. BAPTISTAE PORTAE
NEAPOLITANI
ELEMENTORVM CVRVILINEORVM
LIBRI TRES.

In quibus altera Geometriæ parte reſtituta, agitur de
CIRCVLI QVADRATVRA.

Ad Illuſtriſſimum Principem ac D.
D. FEDERICVM CAESIVM
MONTIS CAELII MARCHION. II. &c.
BARONEM ROMANVM.

ROMAE,
Apud Bartholomæum Zannettum. M. DC. X.

SVPERIORVM PERMISSV.

Imprimatur ſi videbitur R. P. M. Sac. Pal. Apoſt.
Cæſar Fidelis Viceſg.

Libri tres Elementorum Curuilineorum Perilluſtris & Excellentiſſimi D. Ioannis Baptiſtæ Portæ Neapolitani, ex ordine Reuerendiſſimi P. Magiſtri F. Ludouici Yſtella Sacri Palatij Apoſtolici Magiſtri perlegi, eoſque cum nihil fidei, vel moribus aduerſum continere inuenerim typis dignos exiſtimaui. Romæ Die 20. Iulij 1610.

Antonius Butius Fauentinus Ciuis Romanus Philoſophiæ & Medicinæ Doctor.

Imprimatur. Fr. Damianus à Fonſeca magiſter, & Socius Reuerendiſſimi P. Magiſtri Fr. Ludouici Yſtella, ſacri Palatij Apoſtolici Magiſtri, Ordinis Prædicatorum.

In Clarissimum ac Doctissimum Virum

IO. BAPTIST. PORTAM NEAP. LYN.

& in librum de Circuli Quadrato.

Ioannis Demisiani Cephalleniensis D. Philosophi ac Theologi.

ΗΜΟΣ ἐοῖς ἐπέεσσι πολύχροα Δαίδαλα ΠΟΡΤΗΣ
  Φαίνει, τοῖς θαλέθει γαῖα πυκαζομένη.
Οὔατι θαμβαίνουσα βιαρκέϊ μῦθον ἀκούει,
  Καὶ σφετέρης γαίει φέγγεσιν ἀγλαΐης.
Αξυγέτου βάζοντος ἀπείρατα θαύματα πόντου,
  Σιγαλέη πόντος νηνεμίῃ γελάα.
Ηέρος αἰγλήεντος ὅταν χύσιν αὐτῆς ἐνίσπει,
  Ισον ἀπαστράπτει δώμασιν οὐρανίων.
Αἰθέρος ἀστροχίτωνος ἀτειρέα νῶτα πιφάσκει,
  Καὶ Πόλος ἠρεμέων οὐδ᾽ ἐπέρασσε θέει.
Κύκλα δὲ, καὶ Τετράγωνα, Τριγωνά τε, Πρίσματα, Κώνους,
  Καὶ γραμμὰς μετρεῖ, κέντρα τε πυραμίδων.
Οσσα τε πὰρ Νείλου προχοῇς μητίσατο τέχνῃ
  Αἶα δαιτρολίων Ηερίης ναέτης.
Αὐτήνων Σοφίη πολυμήχανα δήνεα τεῖς,
  Υδωρ πρηῢ ῥέον Νεῖλος ἐρυκακέει.
Εδρακε γὰρ Τετράγωνα πάρος πολεμήϊα Κύκλοις,
  Ορκια συνθεσίης, καὶ φιλίης τάμεειν.
Εδρακε, καὶ θάμβησεν ὅπερ χρόνος ὀψὲ φαείνειν
  Ημελλε, ζαθέων ἠΰ τέκος πραπίδων.
Αλλον ἐγὼ Κερνίδη δώσω πολυΐδμονα ΠΟΡΤΗΝ,
  Ην ἡμῖν ἄλλην Παρθενόπην ὀπάσεις.

FRANCISCI STELLVTI
FABRIANENSIS.
LYNCÆI.

Vidimus innumeras mutantem Protea formas;
Credite, nam veri Nuncia Fama canit.
Tortilis en Orbis species se vertit in omnes,
Et QVADRVM teretes efficit arte rotas.
Dicite Pierides quo tandem munere factum?
Aut nostro, aut PORTÆ visq. laborq. pares.

ILL.

ILL.MO PRINCIPI AC D. D.

FEDERICO CAESIO MONTIS CAELII MARCHIONI II.

Io. Baptiſta Porta Neapolitanus. S.

CERTAMVS inter nos, Illuſtriſſime Vir, tu beneficijs, ego officijs; quibus ęquo animo vel vincar abs te, vel, ſi fieri poſſet, vincam te. Et ſanè grauis iſta contentio nullum vnquam finem habitura videtur. Summis me ornas laudibus, meos libellos plauſu, nedum honore proſequeris, &, quod caput eſt, iacentes aliquando, ac mox improborum impetu proterendos, erigis & defendis; quæ quidem merita ita in memoria inſederunt mea, vt mei ipſius potiùs, quam illorũ erga me magnitudinis obliuio capiat. Ego verò ſi titulos percenſere velim, quibus tuũ animum virtus cohoneſtauit, ſplendorem domus, quam

„ Bellipotens illuſtrat Auus, Tu fulcis, & ornas.

aliaq. ornamenta, quibus te natura mirificè cumulauit; & vires, & vita me deficeret. quid? ipſam Inuidiam ad maxima quæque, ac pulcherrima labefactanda natam, virtute ſuperaſti.

„Eſt

„ Eſt aliquod meriti ſpatium, quod nulla furentis
„ Inuidiæ menſura capit.

Sed non eſt animus in præſentia laudes enumerare tuas. maioris id molis eſt. leuiter, at amanter tetigiſſe ſatis; neque enim qui Cœleſtium Orbium ornatum in parua deſcribunt tabella, de illorum pulchritudine quicquam demunt; parua, vt ita dicam, ſed concinna magnitudo. Quid igitur mirum ſi certos fines, terminosq. huic ſuauiſsimæ concertationi non conſtituo? Non patitur mea in te obſeruantia Victoriam. Tu, quæ tua eſt magnanimitas, cedere neſcis. Eſto lis ſub te Iudice. Tu te vince

„ Inq. animis hominum pompa meliore triumpha.

meum certè quidem tibi deuinxiſti, ac deuiciſti. Non excitabo teſtes ex monumentis; quæ in manus peruenerunt Sapientum. Sit hic liber tuo inſignitus nomine, amoris, ac venerationis in te meæ pignus ſempiternum. Circulum quadrare conatus rem ſcilicet aggreſſus in eruditorum identidem commemoratam comitijs, in Philoſophorum agitatam ſcholis, in Mathematicorum iactatam iudicijs. Multos in hoc Theoremate me labores exantlaſſe, curas, & cogitationes euigilaſſe meas; ac pertinaci induſtria deſudaſſe, non inficias iuerim. An verò modum quadrandi Circuli inuenerim, ſicq. præmium, & fructuum meorum cœperim laborũ, non facile ſtatuerim. Id ſaltem aſſecutus mihi videor. Latiſsimum aperuiſſe campum ad meliora vel inueſtiganda, vel inuenienda. Verecundè tamen dixerim, plurima nos excogitaſſe, multa in diſquiſitionem vo-

caſſe,

casse, suisq. examinasse ponderibus, quæ nemo vsque in hodiernum diem odoratus quidem est. Immo, vt id quod sentio, aperiam, opus magnis viris tentatum, ac tandem desperatum, aut inchoauimus, aut perfecimus. nihil tamen in tanto, ac tali negocio pro certo affirmarim, te, non assentiente, tuæ enim Παλλάδος ὑπὸ πτερῖς ὄντα ἄζονται βροτοὶ. tuo iudicio, ac patrocinio fultus, non morabor τοὺς Γεφυριστάς. Tenes, opinor, memoria, incomparabilis vir, Ephesiorum factum. Illi dum hostili vexarentur bello, de rei euentu consuluerunt Oraculum. datum responsum, si Rempublicam sartam tectam cuperent, ad Tutelaris Numinis Templum Vrbē alligarent; quo peracto, hostes in fugam verterunt, Ephesumq. obsidione, ac metu liberarunt. Multi iam cogitant nostra obsidere inuenta, machinas admouent, ac penè labefactant: sed meus Apollo dudum me commonefecit, vt me meaq. tui Genij vinculis obstricta, aduersariorum impetus reprimam, ac frangam. Tuere igitur, Heros, litterarum, ac litteratorum Censor, quæ tibi dicata sunt, eo vultu, quo intuentium allicis animos. Habes à Philosophia non minora clementiæ, quam iudicij præsidia, vt illa nouos hosce foueas conatus, hoc vt defendas. Vale, tecumq. crescat tuæ Gentis spes, Patriæ columen, litterarum decus, meæ Neapoleos amores, Italiæ gloria. Kal. Iulij M. DC. X.

AD

AD LECTOREM
PRAEFATIO.

NON immeritò, Candide Lector, admirari satis non possumus de viris quibusdam omni doctrinæ genere cumulatis, qui, cum mathematicas tractationes sibi assumpserint, atque in ijs cum laude versati sint, de illa parte, quæ curuas complectitur lineas, nihil ferè commentati, aut meditati sint. In quadrando quidem certè Circulo (re scilicet æquè decantata, atque ardua) plerique ingeniosi viri desudarunt, & elaborarunt rectè ne, an secus, ipsi viderint. Ego qui noui aliquid moliri, non aliorum labores veluti fucus surripere studeo, eandem quidem subiui aleam. Sed vt legitimè & expeditius id præstarem, multa ex Euclideis elementis ad propositum argumentum transtuli, ac plurimas confeci demonstrationes, ex quibus, aliquas, quæ ad rem facere videntur selegi, easq. vti curuilinearum figurarum elementa proposui. Hinc ad perdifficilè Theorema de quadrando Circulo, progressus sum. quid vero effecerim in re multis circunfusa tenebris, & in quà summorum virorum ingenia errare potius, quam hærere visa sunt, aliorum esto iudicium. si perfectionem non sum omnino assecutus, conatus certè, & adumbratio tanti Theorematis laudandus.

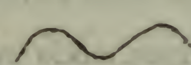
IO. BAPT. PORTAE NEAPOLITANI

ELEMENTORVM CVRVILINEORVM Liber Primus.

DEFINITIONES.

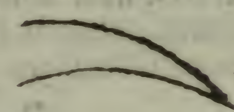
PRIMA.

LINEA curua eſt, quæ inter ſua nõ æquè fluit puncta, ſed facto ſinu flectitur.

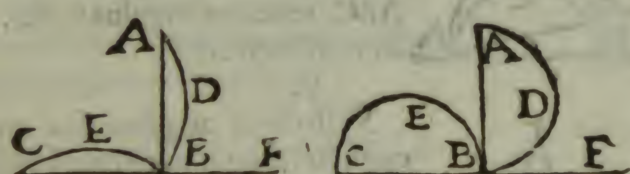


II.

Angulus flexilineus eſt flexarum linearum retuſio ſuo nutu ſibi coincidentium.



III.

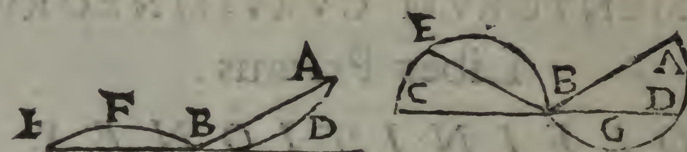


Angulus flexilineus rectus, qui rectilineo reſpondet.

Exempli cauſa ſit A.B.inſidens linea iacens FBC. vtrobiq. ſibi æquales conſtituens angulos ABF, ABC. ſitq. AB. ipſi B. C. æqualis & ipſi AB.hemicyclium circumſcribatur ADB.vel circuli portio, & ipſi BC. alter B. E C. vel æqualis circuli portio. Cyclogoni ergo DBA. CBE. ſunt æquales, & quanto angulus AD.B.F. maior eſt recto ipſo contingentiæ angulo DBF. tanto ABE. ſuperat ipſum ABC. altero contingentiæ angulo ABE.

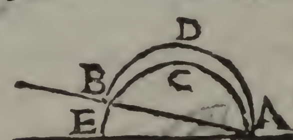
totus igitur A D B E C. toti ABC. recto æqualis, vt probauit Proclus in Eucl.

IIII.



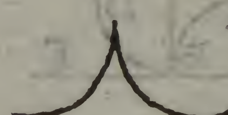
Obtusus curuilineus, qui obtuso rectilineo fit quando à recto resupinata in maiorem angulum abit.

Eodemq. modo angulũ ADB. FE. flexilineum, rectilineo ABE, esse æquale flexilineus angulus FBE.. est æqualis flexilineo D B G. nàm æquales sunt circulorum portiones, si angulum DBG. abstuleris, & reposueris supra EB. erit rectilineus DBE. æqualis flexilineo D G B F E.



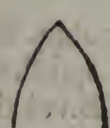
Sic etiã semicirculus ADB. æqualis est A C E, dematur portio communis ABC. remanet angulus CAD. æqualis rectilineo BAE.

V.



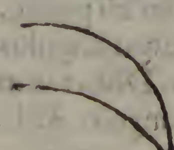
Xystroides angulus siue concauus quando vtrarumq. circumferentiarum caua extra fuerint, & intus se respiciens conuexitatibus suis.

VI.



Contra conuexus angulus quando circumferentiarum conuexa vtrinq. extra fuerint, & inter se suis finibus aspexerint.

VII.



Angulus μηνοϊδής. siue lunaris, qui ex caua conuexavè circumferentia fuerit, vt conuexum vnius alterius conuexitatem aspiciat.

Cys-

VIII.

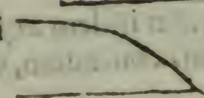
Cyſsoides Angulus ex hederæ folijs nomen indeptum ex gibboſis, cauiſq. lineis conſtat ad punctum vnum conuenientibus, vndatim contra ſe diſcurrentibus veluti Vndulatus.

IX.

Mixtus angulus, qui ex rectis circuloſiſq. lineis componitur.

X.

Cyclogonus, qui à Caua, & recta circuli circumferentia conſtat.

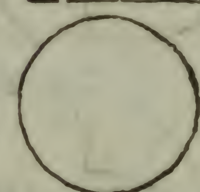


XI.

Κερατοειδὴς. ſiue in cornua falcatus, quando rectæ opponitur conuexa noſtri contingentiæ vocant.

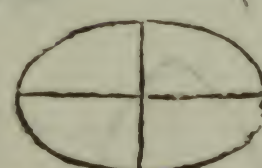
XII.

Figura vel anguloſa, vel agonia, agoniarum figurarum circulus princeps, lineæ partem, quæ ambitioſè circumuoluitur, & aream obambit concauum dicimus, quæ extorſum inuehitur conuexum.



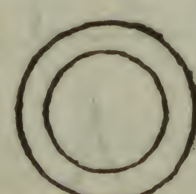
XIII.

Sphærois ſiue Ellipſis ex ambienti linea in ſe recurſa deſcribitur vnius duæ diametri, longitudinis vna longior, latitudinis altera ad rectum in medio ſe ſecantes.



XIIII.

Vertex. ſiue corona eſt duorum circulorum concentricorum circumcurſus.

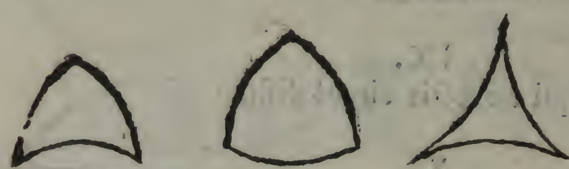


XV.

Anguloſarum figurarum metriſcus ſiue

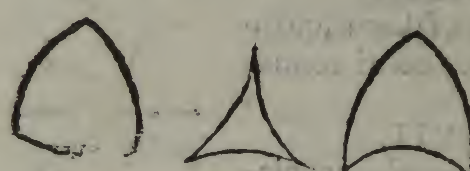
lunula prior, eſtq. in eaſdem partes caua habentibus comprehenſa circumferentijs figura.

XVI.

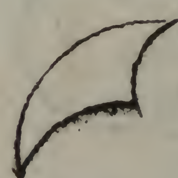


Trilaterarum figurarum flexilinearum triangulum primum eſt, quod tribus conſtat ijſdem æqualibus circumferentijs circuli, idq. connexum, concauum, vel mixtum.

XVII.



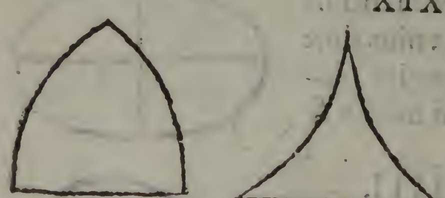
Iſoſcele triangulum curuilineum, quod duabus tãtum æqualibus circuli circumferentijs continetur, idq. etiam conuexum, vel concauum, vel mixtum.



XVIII.

Scalenum flexilineum eſt, quod tribus inæqualibus circuli circumferentijs clauditur; ijsq. cauis conuexis, & mixtis.

XIX.



Semicuruilinea triangula ſunt, quæ ex rectis, curuiſq. circumferentijs continentur.

XX.

Tricuſpidatum triangulum, ſiue acio idea quadrilaterum eſt triangulum quod tres habet acutos angulos.

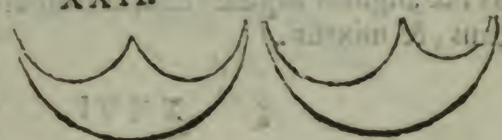
Inter

XXI.

Inter triangulares figuras πελεκοειδὴς. Figura eſt, quæ ſecuris vel bipennis formã habet.

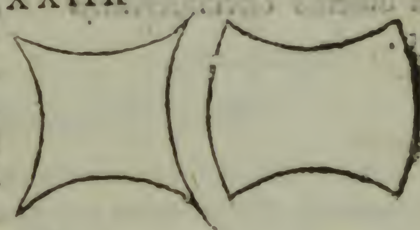
Eius Theocritus meminit. Nicandri Scholiaſtes ſutorium ſcalprum. Τὰ κυκλοτερῆ σιδήρεια, οἷς οἱ σκυτοτόμοι τέμνουσι καὶ ξύουσι τὰ δέρματα. Ideſt circularia ferramenta quibus pelles incidunt, & deradunt.

XXII.



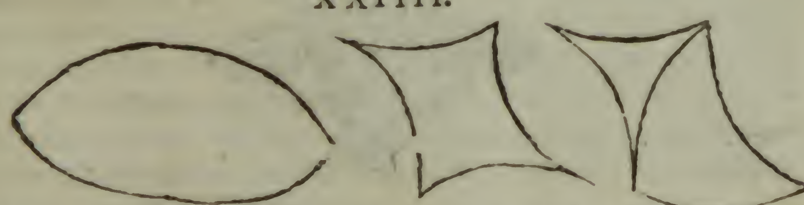
Arbilones ex tribus circumferentijs comprꝛhenſi; Horum meminit Pappus ſpatium illud inter circumferentias interiectum ἄρβηλον vocans.

XXIII.



Quadrilaterarum quidum figurarum curuilinearum quadratum quidem flexilineũ eſt, quod rectis angulis, & æqualibus circumferentijs perſcribetur.

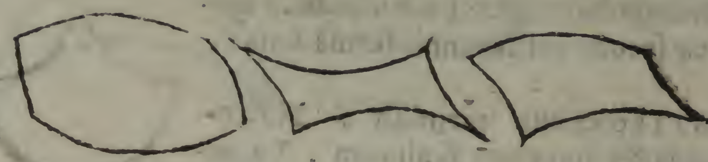
XXIIII.



Rhombus flexilinea æquilatera quidem, ſed non rectangula, aduerſos tamen angulos æquales habet, eorumq. aliquos concauos, conuexos, & mixtos.

Rhom-

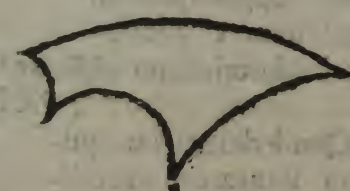
XXV.



Rhomboides vero neutrum horum habet neque laterum, neque angulorum æqualitatem, ſed contrarias circumferentias, & angulos æquales habet ſimiliter etiam concauus, conuexus, & mixtus.

XXVI.

Trapezoides curuilineum, quod quatuor inæqualia latera ex diuerſis circumferentijs habet.

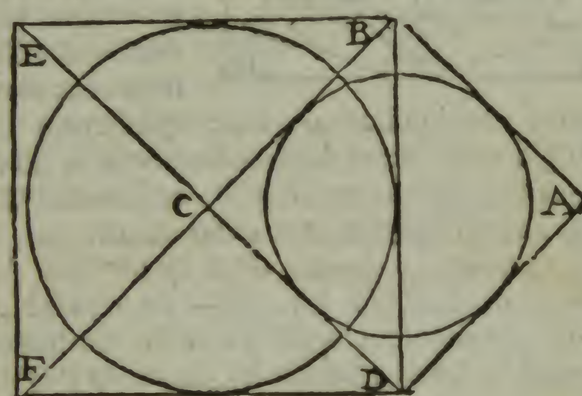


PRO-

PROBL. I. PROP. I.

Datum circulum duplare.

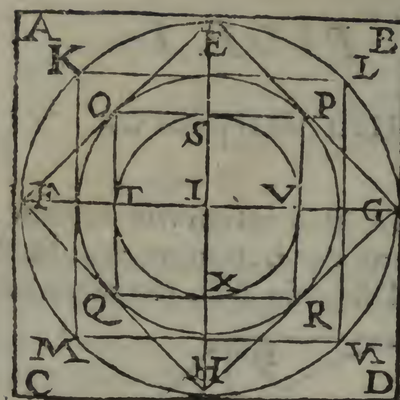
SIT datus circulus A B C D. cuius oportet duplum inueſtigare. Deſcribatur quadratum per 7. 4. Eucl. & ſit A B C D. ducto Diagonio B D. ſecundum datum B D. deſcribatur quadratum per 48. 1. Euclidis, & ſit B E D F. cui circulus inſcribatur per 6. 4. dico circulũ BDFE. eſſe dati duplum. Hanc



conſtructionem demonſtratione fulciendam rati ſumus. quoniam B C D. rectus eſt angulus proinde cum quadrata lateris B C. C D. æqualia ſint quadrato ex B D. ex 47. 1. ergo quadratum ex B D. duplum quadrati A B C D. ſed ex B D. deſcriptum quadratum eſt D B F E, ergo quadratum BDEF. duplum ipſius A B C D. ſed circulus ad circulum eandem rationem habet, quam quadratum inſcriptum, aut circumſcriptum, vt ex Euclidea demonſtratione ratum eſt duodecimi elementorum ſecunda, ergo circulum ABCD. duplauimus per circulum BEFD.

Plato ita quadratum duplat vt à Vitruuio annotatur. Dimidium quadrati B D C. eſt quarta pars quadrati BEF. ergo quadratum BEDF. duplum eſt ABCD.

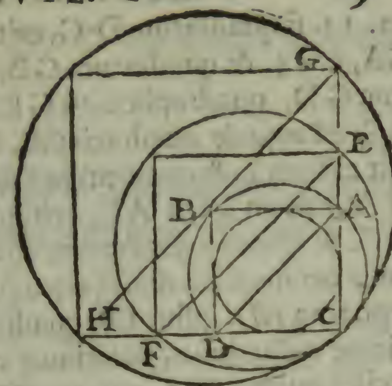
Poſſu-



Possumus, & alio modo circulos duplare, si circa datum circulum quadratum induxeris, & post circa quadratum circulum, & circa circulum aliud quadratum eodem modo alios circulos semper duplicabis. Sed quo iuuenes rectius imaginari, & capere possint exemplo duximus declarandum. Esto datus circulus STVX. quem oportet conduplicare, huic quadratum circumstruemus O P Q R. cuius latera duabus diametris se ad centrum I, decussantibus bipartiemur, & circa quadratum O P Q R. circuculus alter designetur mox aliud quadratum. K. L. M. N. & alter circulus, ac demum aliud quadratum A B C D. quod postremum circulum K L M N. intercludat. His perstructis aio aream inter circuli K L M N. finitionem concludam proximè sepientis arctioris sui circuli O P Q R. duplam esse, vt laxior postremi area eius, qui minimum intercludit quadrupla sit, & sic in infinitum duplare possumus cuius veritas hac demonstratione repræsentabitur. Quoniam linea A B. bifariam diuisa est in E, quadratum A B C D. quadruplum est ipsius A E, & sic in quatuor quadrata æqualia A I, E G, FH, I D. & hæc à quatuor diagonijs bifariam diuisa sunt E F, F H, H G, G E, quatuor igitur triangula extrinseca, F A E, E B G, G D H, H C F. quatuor interioribus æqualia sunt; ergo totum quadratum A B C D. quadrati E. F. G. H. duplum erit, eademq. ratione quadratum E F H G. ipsius O. P. Q. R. duplum erit, & primum A. B. C. D. huius quadruplum.

Anni-

Annitemur etiam per quadrata dupla ambientia idem rimari, & absoluere. Esto datus circulus A B C D, cui quadratum ABCD. circumstruimus: mox ab oppositis angulis ducto diagonio AD & à puncto C, superne versus A, signa lineam eiusdem longitudinis ipsius AD, & sit

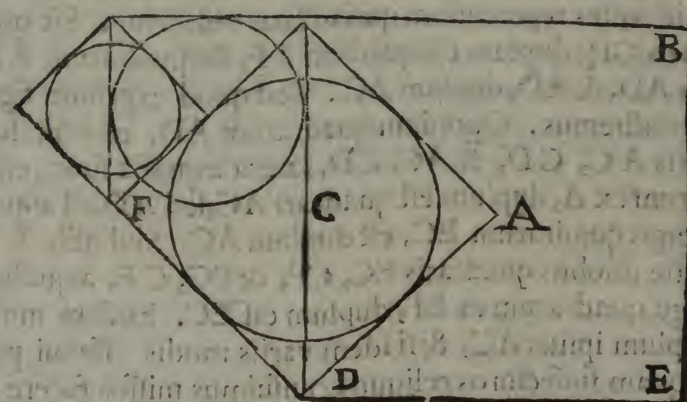


C E, & ex parte inferiori sit C F, mox trahe diagonium E F; & iterum quanta E F, figura in linea C G, & inferne lineam CH, & id toties repetendum quoad satis videbitur. Sic quadratum ex GH, duplum est quadrati E F, & quadratum E F, duplum AD, & AD, duplum AC. Sed quod exprimit figura, demonstremus. Quoniam quadratum AD, est æquale quadratis A C, CD, & AC, CD, latera æqualia sunt, ergo quadratum ex A, duplum est quadrati AC, sed AD, est æquale EC, ergo quadratum EC, est duplum AC. Sed quia E F, est æquale duobus quadratis EC, CF, & EC, C F, æqualia sunt, ergo quadratum ex EF, duplum est EC. Eodem modo GH, duplum ipsius AC, & si idem varijs modis assequi posset, tanquam suffecturos reliquos censuimus missos facere.

Libet non prætermittere, alium quadruplandi modũ.

Sic circulus B C, quem intendimus quadruplare circa quem æquilaterumtriangulum per tertiam quarti describamus, & circa illud alium circulum per quintam eiusdem quem quadruplum pronunciamus. Quoniam DG, tripla est ipsius GA. ex

12. 13. ſi quadratum D G, erit duodecim partium talium GA, erit 4. & quadratum G B, erit talium 3. nam quadratum G D, quadruplum eſt G B, ſuæ dimidiæ, ſed quadratum AG, eſt æquale quadratis GB, BA, igitur ſi quadratum G A, erit talium 4. & quadratum GB, talium 3. erit quadratum B A. talium I, ſed A E, erit quatuor, quoniam eſt æqualis A G. & quando quadratum totum 4. eſt, & ſui pars 1. erit linea per medium diuiſa ergo AB. ipſius AE. dimidium erit, ergo tota AD. ipſius EB. quadrupla eſt. Si vero circulum diuidere voluerimus, poterimus conuerſa vti operatione; Et ſi facilia quidem ſint, quo tyrones iuuemus alium modum apponere non pigebit.



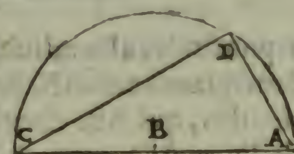
Deſcribe quadratum tantæ quantitatis quantæ duplarem circulum diuidēdum fieri cupis, & ſit ABCDE. cuius medio fige punctum A. ſuper quo ambitioſa linea circumducatur, quæ omnia quadrati tangat latera, deinde annecte literas rectas à centro ad angulos duos AC. CD. & conſtitue triangulum ACD. & aliud priori par triangulum conſtitue cuius angulus F. erit rectus eſt igitur ACDF. ſecundum quadratum primi dimidium. In medio puncto huius diagonij CD, qui ſit G. pone pedem circini, & reliquo vago deſcribe circumferentiam tangentem ſui latera quadrati ACDF. & hoc modo

do in infinitum poteris circulos dimidiare. Demonstratio ex superiori pendet.

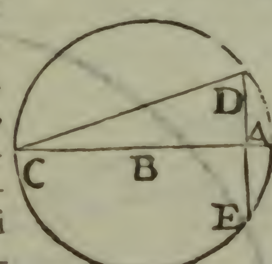
Datum circulum triplicem quintuplicem, & septuplicem reddere.

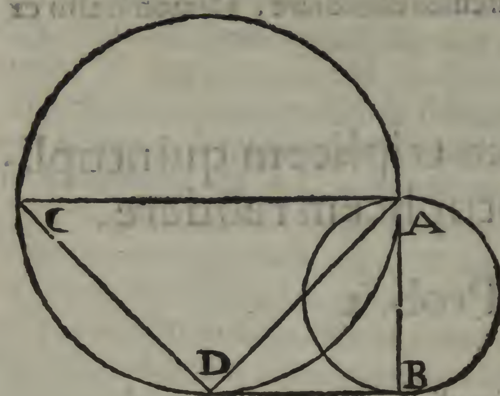
Prob. 2.

SIT dati circuli diameter AB. quem volumus triplare elongetur AB. in C. & sit AB. æqualis BC. & fiat circulus ex diametro A C. & sit AB. æqualis A D. quæ in circulo locetur per primam 4. Euclid. & ducatur DC. dico circulum ex DC. diametro circuli ex AB. tripli esse cuius demonstratio ex 12. 13. lib. Eucl. pend.

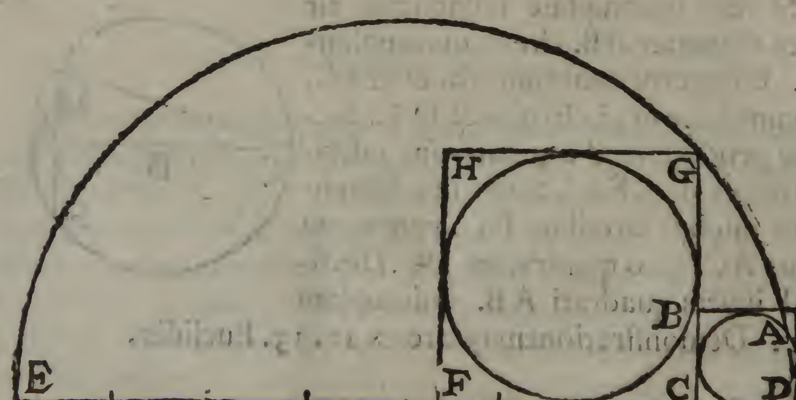


Si vero quintuplare voluerimus sit data diameter AB. circuli quintuplandi. Elongetur quantum AB. & sit BC. circumducatur ei circulus A D C. in quo pentagonum æquilaterum inscribatur per 9. 4. Eucl. & sit linea subtendens duobus lateribus DC. pentagoni latus AC. dico quadratum DC. DE. simul iuncta quadrati AB. quintuplam esse. Demonstrationem quære ex 12. 13. Euclidis.





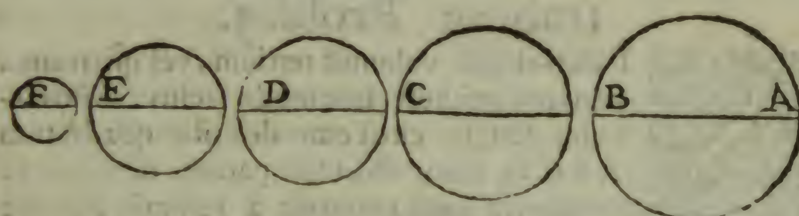
At is modus, vniuersalior, & commodior visus. Sit datus circulus A B. dimetiente descriptus, volo tergeminum reddere. Puncto igitur B. ipsius lineæ A B. ad rectos angulos adiungatur D B. paris quantitatis. Mox trahatur AD. dein ipsius lineæ DA. in puncto D. alia adiungatur DC. ad rectos angulos, & eiusdem quantitatis AB, & ducatur CA, & dimetiente CA. fiat circulus, qui AB. circuli tergeminus erit. Quoniam potentia lineæ AC, potentia linearum AD. DC. sibi vendicat, & AD. ipsas AB. BD. igitur AC. valet tres circulos, cuius inest A B. Quod si quintuplare, aut per alios impares numeros multiplicem reddere voluerimus: Addemus puncto C. lineam alteram ad pares angulos quantitatis AB. & erit quintupla ipsius AB.

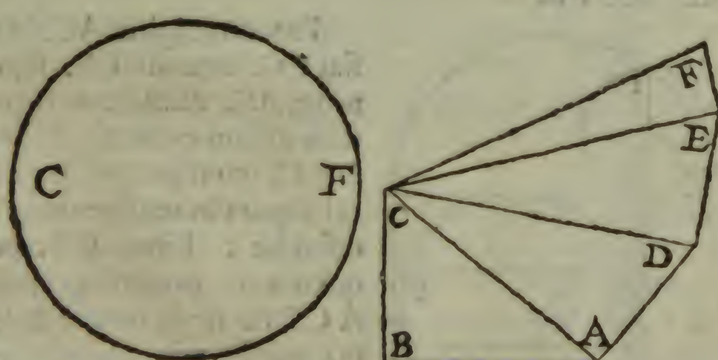


Possumus etiam si velimus alio modo idem exquirere.

Sta-

Statuatur circulus A B C D. ſepties multiplicandus cui circumducatur quadratum, & latus eius producemus, illudque in octo partes diuidemus, cuius principium D. finis E. mox DE. per medium diuidatur in F. poſitoq. circini pede in F. & alio DF. circumducatur quouſq. ſemicirculum abſoluat DE. & latus C. B. quadrati producatur vltra B. in continuum, rectumq. ad arcum DE, & vbi eum contingit, illic ſcribe literam G. & ex CG. fiat quadratum CGHE. in quo circulus inſcribatur, qui continebit ſepties ipſum BACD. Quoniam CG. eſt media proportionalis inter EC. CD. igitur per 13. 6. Euclid. vt EC. prima ad tertiam CD. ita GH. quadratum ſecundæ ad BD. quadratum tertiæ per 20. 6. Eſt autem E C. per conſtructionem ſeptupla ipſius C D. igitur quadratum HC: ſeptuplum ipſius quadrati BD. quod probandum aſſumpſimus.



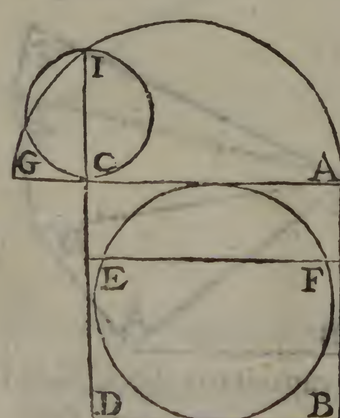


Sint poſiti quini circuli diuerſæ capacitatis AB. C.D.E.F. quo-

quorum quantitates volumus ſingulari circulo compræhendere, quod ita propemodum faciendum exiſtimamus. Eſto enim circuli diameter AB. conſtituatur ad rectos angulos ei BC. mox ducatur linea ab A. ad C. & hæc dimetiens poteſt binos circulos AB. C. Porrò puncto A. lineæ AC. recta linea erigatur ad rectos angulos, quæ ſit AD. & à puncto D. trahatur linea D.C. & hæc dimetiens eſt capiens tres circulos AB. C. D. ipſi demum CD. recta linea ad rectos erigatur DE. quarti circuli dimetiens potens quatuor circulos. Poſtremo ei lineæ EC. ad rectos iterum excitetur quinti circuli EF. trahaturq. per FC. dimetiẽs, capiẽs iam cunctos circulos, & hoc modo omnes licet quotquot volueris compræhendere. Demonſtratio habetur ex penultima 1. libri Euclidis.

Ex dato circulo datam partem ſubtrahere. Probl. 3.

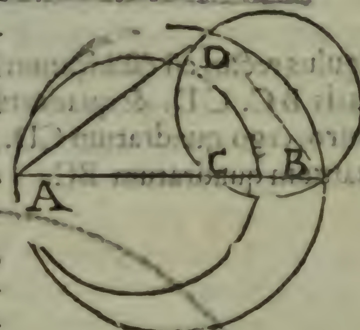
SI dati circuli volumus tertiam, vel quartam partem extrahere, hoc modo facito. Eſto circulus ABCD. circa eum deſcribe quadratum ABCD. cuius abſcinde partem tertiam, ac tranſuerſa linea conuenit à reliquis ſupernè diſtinguere FE.



Procurrat igitur AC. in G. & fiat CG. æqualis CE. ſupra lineam AG. dimidium rotunditatis arcum excurrat, & linea DEC. eouſque producenda erit, quo circumferentiam in I offendat. Linea CI. poteſt quantum paralellogrammum ACFE. ſic de quinta & ſeptima parte cuius demonſtratio ex vltima ſecũdi depẽdet Eucl.

Datis

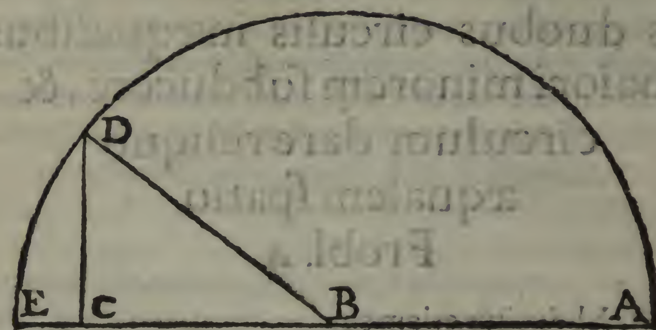
Datis duobus circulis inæqualibus à maiori minorem ſubducere, & circulum dare reliquo æqualem ſpatio. Probl. 4.



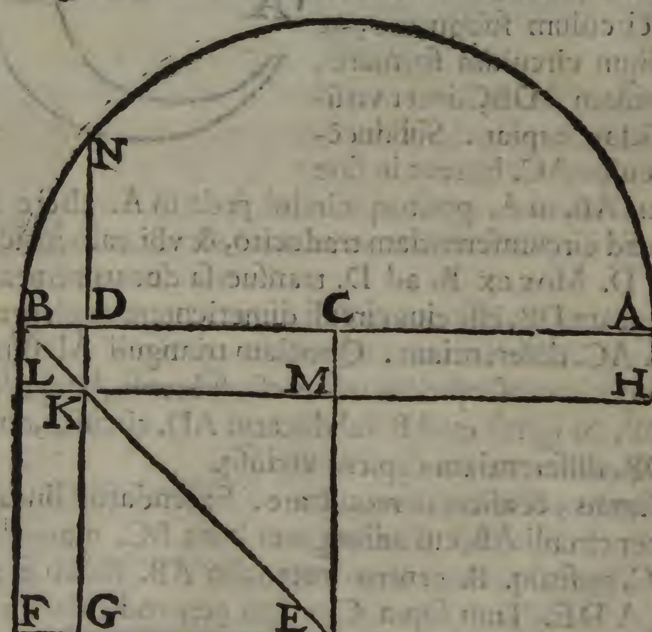
SVbducitur etiam circulus minor à maiori, & circulus etiã formari poteſt, qui vtrunſque differentiam capiat. Eſto maior circulus ABD. volo ab eo circulum ſubducere, ac mox alium circulum formare, qui lunulam ADBC. inter vtrũque relictam capiat. Subducẽdus circulus AC. hæreat in fine diametri AB. in A. poſitoq. circini pede in A. altero ad C. vagum ad circumferentiam traducito, & vbi eam incidit, ibi locetur D. Mox ex B. ad D. tranſuerſa ducatur linea DB. Dico lineam DB. eſſe eius circuli dimetientem capientem inter AB. AC. differentiam. Quoniam trianguli ADB. angulus D. ad circumferentiam rectus eſt, ſubtenſa AB. poteſt, vt AD. DB. Si igitur ex AB. ſubducatur AD. circulus, remanet alter DB. differentiam capiens vtriuſq.

Poſſumus, & aliter demonſtrare. Extendatur linea AB. diameter circuli AB, cui adiungatur linea BC. diameter circuli AC. poſitoq. B. centro interuallo AB. facito ſemicirculum ADE. Tum ſupra C. erigo perpendicularem CD. quouſq. tangatur circumferentia in puncto D. & connecto BD. Dico CD. eſſe quæſiti circuli diametrum. Quoniam C.

angu-



angulus rectus est quadratum subtensæ BD. æquale est quadratis BC. CD. & quadratum BD. est æquale AB. quia ex centro, ergo quadratum CD. tanto minus est quadrato BD. quantum quadratum BC.

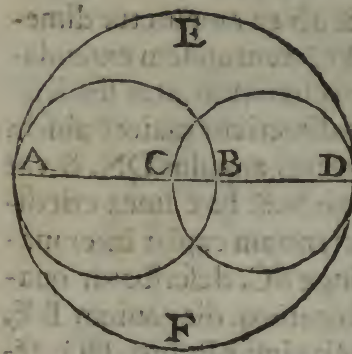


Quod si voles alio modo efficere hac ratione assequeris.
Sit

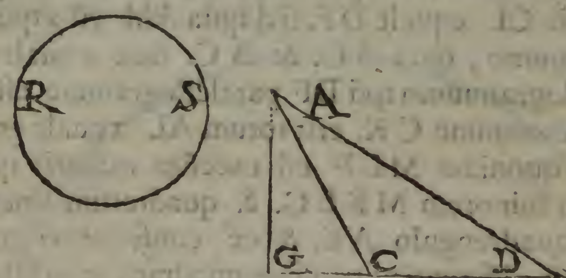
Sit dimetiens maioris circuli CB. & ab ea amputetur dimetiens minoris circuli CD, & linea B C tantundem extendatur ad A, & puncto C facto centro circumducatur semicirculus ANB.& à puncto D,vbi minor dimetiens maiorẽ abscindit, erige super transuersam AB ad rectos angulos DN. & vbi DN periferiam secat ANB. istic pone N.& hæc linea erit dimetiens circuli inueniendi,qui differentiam capiat inter maiorem,& minorem circulum. Ex linea BC. describatur quadratum per 46. p.E. & sit CEBF. ducaturq. diagonium B E. & per D punctum descendat paralellas ipsi BF. sitq. DG. secabitq. diagonium in K & per K signum excitetur alter paralellus ad AB, & sit HMKL. & ex A ad H ducatur alter paralellus ipsi C M. Quoniam supplementum C K. supplemento KF. per 43. 1. est æquale, addatur commune quadratum D L. erit CL æquale D F. sed quia AM est æquale MB paralellogrammo, quia A C. & B C. sunt æquales, ergo AM paralellogrammum ipsi DF paralellogrammo est æquale, addatur commune C K. erit totum AL æquale gnomoni MLF. sed quoniam MLF est excessus maioris quadrati CBEF. super minorem M K E G. & quadratum lineæ D N est æquale quadrangulo A K. & ex consequenti gnomoni MBF quæ est differentia vtriusque quadrati; ergo DN circulus est differentia duorum inæqualium circulorum, quæ erat demonstrandum.

Datis tribus circulis,duos à maiori,qui duobus circulis laxior sit, subducere, & circulum dare reliquo spatio æqualem. Probl. 5.

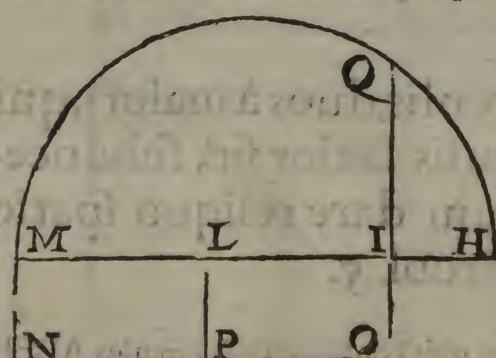
SIT amplius qualem quis conficere velit circulus ADEF. sintq. pro arbitrio bini circuli A B. C D. quorum areæ



totam non contineant continentis amplitudinem, & ij vel in se ipsos flexi, vel mutuo intercisi, vt in exemplo, volo constringi circulũ, qui reliquum spatium contineat, scilicet interceptum vacuum. Ex tribus AD. DC. BA. fiat triangulum ACD. quod obtusum erit producaturq. alterutrius maioris circulatus, videlicet DC. eousque sit productionis meta, quousque à trianguli supercilio, quod prædictæ lineæ incumbit, linea



ad perpendiculum descendat, sitq. AG. His perfectis extruatur paralellogrã-mum, cuius productus latus sit ex CD. geminata, & sit ML. LI. breuius ex CG. sitq. MN. IO. & producatur MI. donec æquetur IO. & sit IH. & extremæ lineæ ora terminentur per

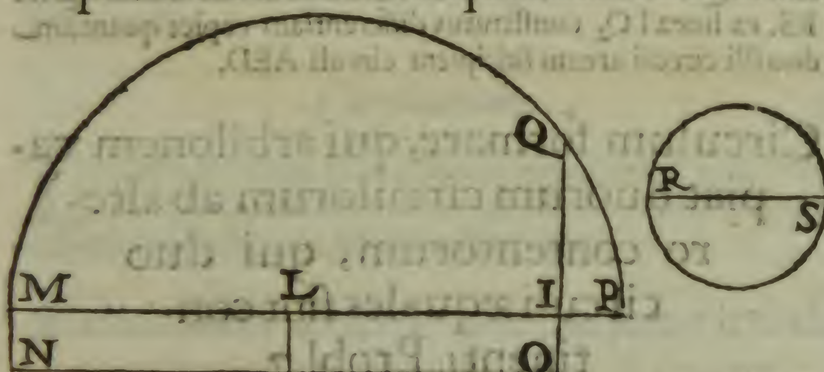


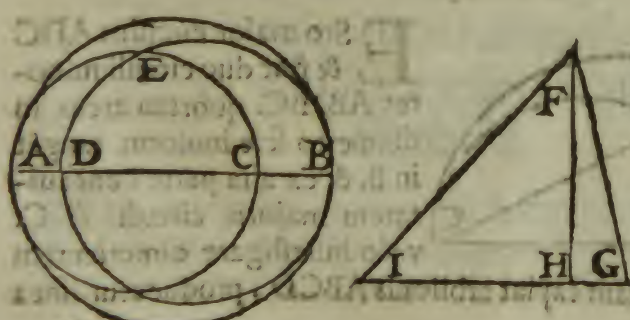
circuitionis arçum MQH. elongeturq. OI. inferaturque

coeun-

coeunti lineæ cum arcu litera Q. ſic ex linea I Q. fiat circulus R S. capiens iam dictam differentiam. Quoniam angulus ACD. eſt obtuſus, quadratum lineæ AD maioris circuli ſuperat quadrata DC, CA, minorum circulorum per rectangulum compræhenſum ex D C. & C G. bis per 12. 2. Euclid. & ex his conſtitutum rectangulum M I, & diameter Q I. capiet compræhenſam aream, ex qua circulus RS. quæſitam differentiam continebit.

Datis tribus circulis duos à maiori, qui duobus circulis anguſtior ſit, ſubducere, & circulum dare reliquo ſpatio deficienti æqualem. Probl. 6.

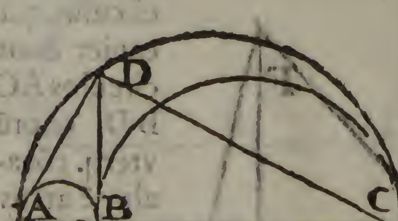




Eſto AEB. circulus, qui capiet duos circulos AC BD. quorũ vterq. cõcauitatẽ arcus capiẽtis cõrigat, ſuiſq. ar-

arcis continentis areã excellant, vestigandus est circulus, qui differentiam excellentis areæ excipiat. Fiat triangulum ex tribus lineis AB. AC. DB. per 22. 1. Euclid. & sit G F I. qui erit acutus, cadat ex apice F. trianguli in substratam basem GI. orthogonaliter linea FH. & vbi eam abscindit, illic fige literam H. Porrò ex geminata base G I. & linea G H in se ductis, fiat paralellogrammum M O. & superior linea M I procurrat quousque sit æqualis I O. & sit P. Mox partire interuallum MP. per æqualia in D. & ex D centro describe semicirculum, elongeturq. linea I O. quousq. attingat arcum MP. in Q. & I Q dimetiens erit futuri circuli quæsitam differentiam capientis. Quoniam quadratum FI. minus est F G. G I. quadratis tantum, quantum rectangulum bis sumptum ex linea I G. G H. per 13. 2. Euclid. quod erit NI. & linea I Q. erit dimetiens continens aream N I. circulus igitur RS. ex linea I Q. constitutus differentiam capiet quantam duo illi circuli aream suscipient circuli AED.

Circulum formare, qui arbilonem capiat duorum circulorum ab altero contentorum, qui duo circuli æquales sint continenti. Probl. 7.



Esto maior circulus ADC & sint duo circuli minores AB, BC. quorum arcus in diametro sese inuicem tangãt in B. & ex alia parte concauitatem maioris circuli A. C. volo inuestigare dimetientem circuli, qui aream capiat arbilonis ABCD, producatur linea

ex mutuo circulorum contactu B. donec rotundationis maioris circuli aream tetigerit BD. dico eam esse diametrum futuri circuli, qui arbilonis ABCD. aream continet. Hanc constructionem præsenti demonstratione suffulciemus. Quoniam linea AC. secta est in puncto B. quadratum, quod fit ex A C. æquale est quadratis, quæ fiunt ex AB. BC. & paralellogrammo, quod bis fit ex CB. BA. ex imperio 4. 2. Euclid. Sed paralellogrammum ex CB. BA. est æquale quadrato DB. circulus ergo ex DB. est æquale arbiloni ABCD. quod quadratum ex DB. æquale sit quadratis AB. BC. patet etiam ex 17. 6. Euclid. Vel quoniam circulus ex D C. æqualis est duobus circulis ex DB. BC. quia B. est angulus rectus, & circulus ex D A. circulis ex AB. B D. ergo circulus ex AC est æqualis duobus circulis A B. B C. & duobus circulis ex DB. qui in eo continentur, arbilon igitur ADCB. ex circulo D B. constat.

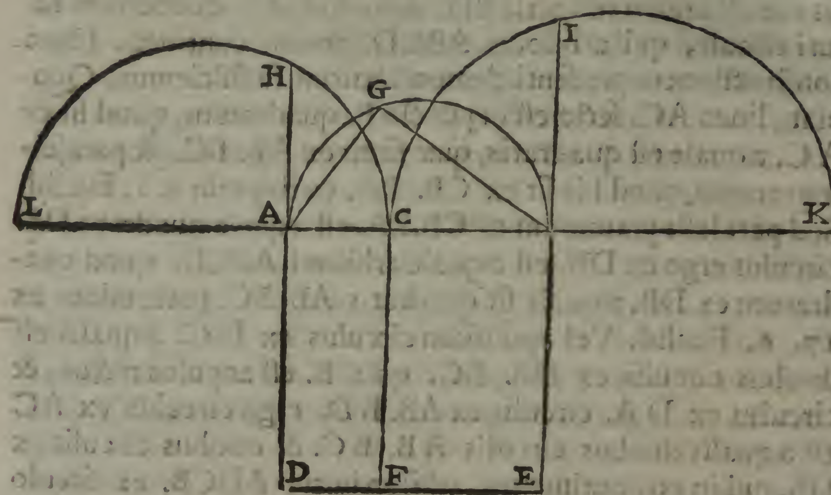
Corollarium.

EX hoc prouenit dato arbilone posse illico dari circulum ei æquale, scilicet lineam erigendo ad duorum semicirculorum coniunctione ad circumferentiam.

Si diameter secetur vtcunque, circuli, qui fiunt ex tota, & singulis partibus continentur, æquales sunt ei, qui à tota fit circulo. Probl. 8.

FIat quadratum ex linea AB. & extendatur AB vsque ad K. & sit æqualis AB. & supra CK fiat circulus C I K. & ex alia parte BA extendatur in L, & sit æqualis AB. & super

per

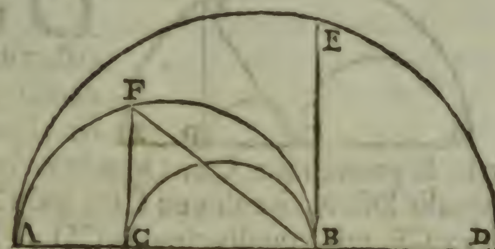


per CL. formetur circulus, & ſit CHL. & ſupra AB fiat alter circulus AGB. & ex C extendatur paralellus ipſi AD. BE. & ſit FCG. extendaturq. DA ad H. & EB ad I. ducanturq. ex G. GA. GB. Quoniam quadrangulum ex KB. BC. eſt æquale quadrato BI. & quadrangulum ex LA. AC. eſt æquale quadrato AH. coheant ipſæ BI. AH. in circumferentia AGB. in puncto G. quia in circumferentia ad rectum angulum: ergo quadratum ex AB. duobus quadratis AG. GB. æquale erit, & ſic de circulis, vel aliter.

Quoniam per præcedentem diameter diuiſa bifariam in C. quadratum ex AC. & CB. & rectangulum bis contentum ex BA. AC. eſt æquale quadrato AB. ſed rectangulum bis contentum ex BA. AC. eſt æquale quadrato ex CG. ſed quadratum ex BC. CG. & quadratum ex AC. CG. ſunt æqualia quadratis ex AG. GB. & quadratam ex AG. GB. ſunt æqualia quadrato ex AB. ergo oſtendimus, quod intendebamus, & eſt ſecunda ſecundi Euclid.

Si diameter ſecetur vtrunq; circulus ex tota,& eius parte contentus æqualis erit circulo, qui ex partibus continetur, & eius quod ex prædicta parte fit circulus. Propoſ. 9.

SIt diameter AB. ſecta vtcunq; in puncto C. dico circulum ex AB. BC. contentum æqualem eſſe circulo ex BC. CA. contento, & circulo CB.

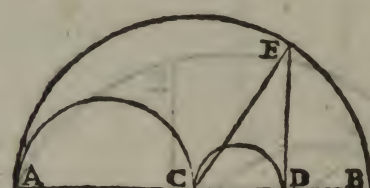


Extendatur AB. in D. & ſit BD. æqualis ipſi BC. & ſuper ACBD. fiat circulus, & ſit AED. & ex puncto B. eleuetur perpendicularis vſque ad E. Idem fiat ex altera parte. Supra AC. & CB. duo circuli, & aſcendat ex C perpendicularis CF vſque ad ſemicirculum AFG, extendaturq. FB.

Quoniam quadrangulum, quod fit ex AB. BD. æquale eſt quadrato, quod fit ex BE. & quadrangulum, quod fit ex BA. AC. æquale quadrato ex CF. ſed quadratum ex FG. æquale eſt quadratis FC, CB. quia C angulus eſt rectus ergo circulus ex AB. BC. quod eſt BF æquale eſt circulis ex CB. & qui fit ex BC. CA. & eſt 3. 2. Euclid.

Si

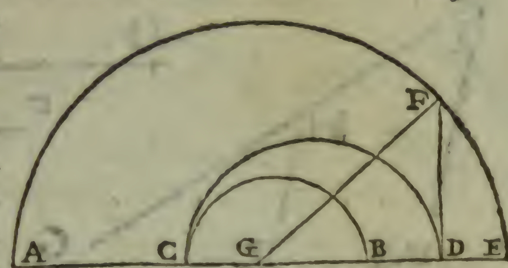
Si diameter ſecta fuerit in partes æquales,& inæquales circulus ex inæqualibus partibus contentus vna cum eo,qui fit ex linea, quæ inter ſectiones interijcitur æqualis eſt circulo, qui fit à dimidia. Prop. 10.



DEſcribatur circulus ex Diametro CA. alter ex AB. alter vero ex CD. ex D. puncto erigatur perpendicularis vſque ad circumferentiam in E. & protrahatur CE. Quoniam circulus ex AD. DB. eſt æqualis DE. & circulus ex CD. ipſi CD. ergo circulus, qui fit ex CE. erit æqualis circulis CD. DE. ſed CE. eſt æqualis CA. quia ex centro ad circumferentiam, ergo circulus ex duabus inæqualibus partibus compoſitus AD. DB. qui eſt DE. & circulus CD. vtrique æqualis eſt circulus ex dimidia CA. compoſitus, & eſt 5. 2. Euclid.

Si diameter bifariam ſecetur,eiq. in rectum adijciatur quædam recta linea, circulus ex tota diametro cum adiecta tanquam ex vno diametro,vna cum circulo dimidiæ æquales ſunt circulo ex dimidia, & adiecta tanquam ex vna diametro deſcripto. Prop. 11.

SIt diameter AB. ſecetur bifariam in C. & ei in longum adijciatur linea BD. dico circulus deſcriptus ex AD. DB. vna

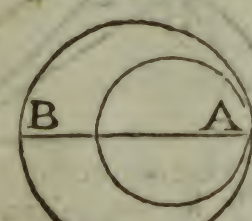


DB. vna cum circulo CB. æquales eſſe circulo, qui fit ex CD.

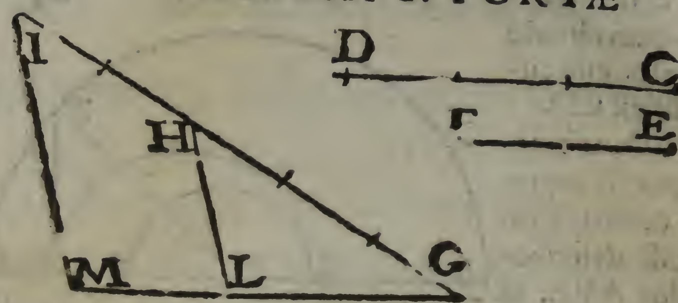
Lineæ AD. adijciatur DE, quæ ſit æqualis DB, & centro G interuallo GE deſcribatur circulus AFE. & ex puncto D linea ad rectum erigatur vſque donec circuli circumferentiam contingat, & ſit DF. & erit quadratum quadranguli AD. DE. & puncto D, linea DC ſecetur CB æqualis, & erit GD. & connectantur puncta GF. linea GD eſt æqualis CB. ex conſtructione. Quoniam linea AC. eſt æqualis lineæ CB. & CB ipſi GD. adijciatur ipſi AC. communis CG. & linea DE. eſt æqualis BD. ex conſtructione, ergo CD. ipſi GE. & angulus ad D. rectus eſt, valet ergo quadratum GF. quadrata GD. DF. ergo quadratum GF. valet quadratum CD. quod demonſtrandum propoſueramus, & eſt 6. 2. Euclid.

A dato circulo alium in datam proportionem abſcindere.

Prop. 12.

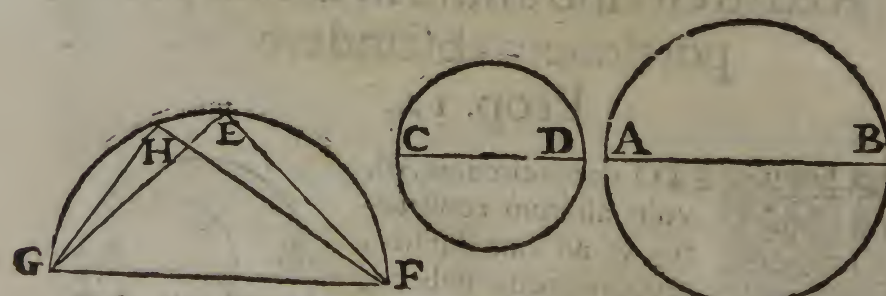


ESTO datus circulus AB. volo alterum conſtruere, vt ad eum datam proportionem habeat, ſitq. data proportio CD. ad EF. ſcilicet ſeſquialtera. Iungantur angulo binæ lineæ, quarum vna GH. ſit æqualis lineæ CD. protendanturq. quouſque HI ſit æqualis EF. Mox alteri lineæ æquetur dia-



meter AB. quæ ſit GL. iungaturq. HL. & GL. extendatur, & à puncto I. lineæ H L. paralellus excitetur I M. dico LM. diametrum eſſe queſiti circuli A O. ſubſequialteri, & erit quarta linea proportionalis inuenta. Quoniam proportio GH. ad HI. eſt ſicut GL. ad LM. ex 12. 6. Eucl. & GH. ad HI. eſt ſeſquialtera, ergo GL. diameter ad AO. diametrum ſeſquialtera eſt.

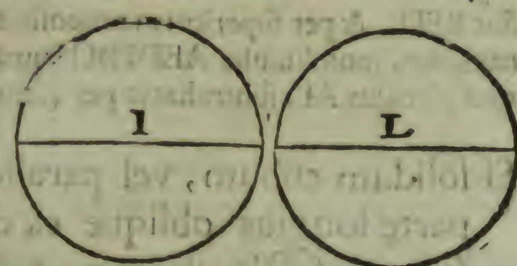
Ex duobus inæqualibus circulis duos æquales facere. Prop. 13.



SInt duo circuli inæquales AB. CD. volo hos duos circulos inæquales ad duos æquales reducere AB. DC. coniungo ad rectum angulum diametros, & ſint GHF. & connecto GF. tunc ſuper FG. facio ſemicirculum, qui per H rectum angulum trãſibit, mox diuido circumferentiã in E. bifariam, &

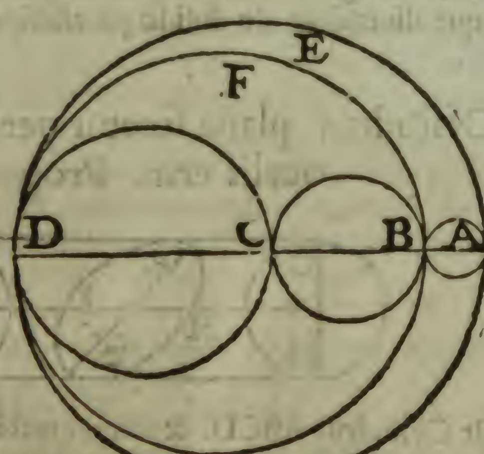
pro-

producto GE.EF. dico duos circulos duarum dimetientium GE, EF. esse æquales duobus dimetientibus GH, HF. & proinde circulis I, L. Quoniam angulus H est rectus, quia ad circumferentiam, ergo quadrata GH. HF. sunt æqualia quadrato GF. & quadratis GE, EF. etiam æqualia quadrato GF. & quæ æqualia vni tertio æqualia inter se, ergo circuli I, L. sunt æquales AB. CD.



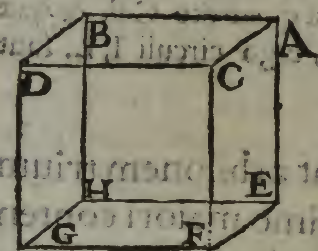
Circulum formare, qui capiat arbilonem trium minorum circulorum, ab imo maiori contentorum, qui tres circuli æquales sint diametro continentis. Prop. 14.

ESTO circulus AED. cuius dimetiens AD. tribus circuli diametris intercidatur DC CB, BA. postulamus circulum formare, qui arbilonem, vel interceptam aream à maioris circuli cõcauitate, & minorum conuexitate contineat. Ex BD Diametro circulus



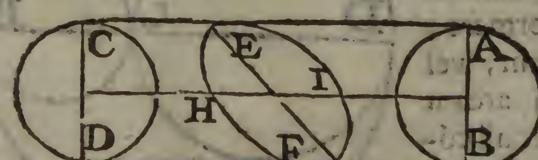
fiat BFD. & per ſuperiorem propoſitionem 7. arbilon BFDC capiatur, mox lunulæ AEDFBC quantitas cognoſcatur, à qua circulus AB. ſubtrahatur per 4. noſtram,& ſic de cæteris.

Si ſolidum cubum, vel parallelipedum altera parte longius oblique ex oppoſitis lateribus ſecetur ſectio altera parte longius erit. Propoſ. 15.



ESto ſolidus cubus ABCDEFGH & ſecetur à plano BDEF. oblique ex oppoſitis cubi lateribus BD. EF. dico BDEF. eſſe altera parte longius. Quia DG, GF, æqualis eſt. DF autem ſubiacens linea eſt æqualis duobus quadratis DG. GF. ergo longior BD. quæ ipſi DG æqualis eſt, idem dicendum de altera parte BH. HE. quia BE, maior eſt BH. HE. Igitur BDEF. altera parte longior eſt. Idem quoque dicendum de ſolido parallelipedo altera parte longiori.

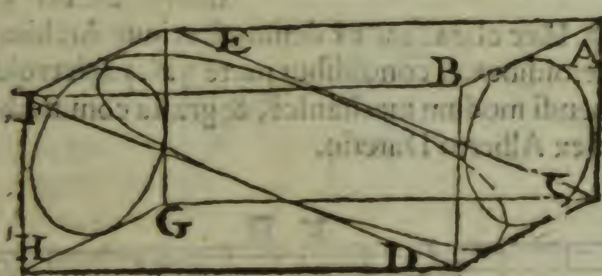
Si Cylindrus plana ſecetur per obliquum ſectio oualis erit. Prop. 16.



SIt Cylindrus ABCD. & ſecetur rectè ABG. ſectio AGB. circulus erit, ſi oblique ſecetur, vt in IEHF. ſectio ſphæroïs erit ex ea quæ Serenus probauit in ſuis Cylindricis.

Si

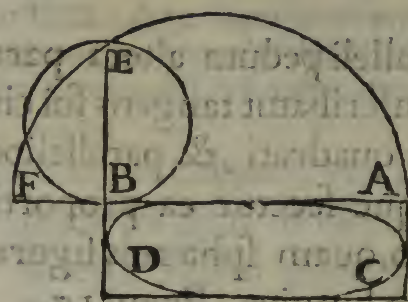
Si intra solidum parallelipedum altera parte longius cylindrus inscribatur tangens sui circuli basis latera eius quadrati, & parallelipedum solidum obliquè secetur ea proportio erit circuli quadrato, quam sphærois figura, ad suum altera parte longius. Prop. *17*.



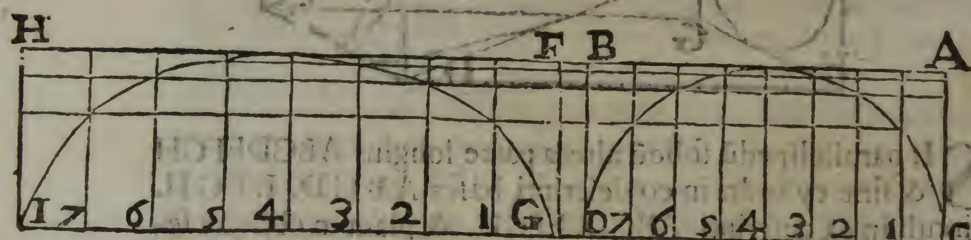
SIt parallelipedũ solidũ altera parte longius ABCDEFGH & sint cylindri in eo descripti bases ABCD. EFGH. circuli in ea descripti ABCD. EFGH. & planum obliquè secans illud sit CDEF. & sphærois in eo descripta CDEF. dico sphæroidem intra se descriptam eandem habere proportionem ad suam figuram altera parte longiorem, quàm circulus ABCD. ad suum quadratum ABCD. cuius demonstrationem omittimus: nam ex his, quæ Euclides in suorum elementorum, 12. & Archimedes in 31. præpositione descripserunt, demonstratur.

Data sphæroide circulum eiusdem areæ describere. Prop. *18*.

ESto data sphærois ABCD. iubeo circulum eiusdem spatij. Circa datam sphæroidem quadrangulũ circumscribatur



batur ABCD. & latus AD prolongetur vſque ad F. vt BF. ſit æqualis BD. Et circa AF. ſemicirculus deſcribatur, elongeturq. BD. donec circumferentiam feriat, & ſit in puncto E. dico circulum conſcriptum circa BE. diametrum continere aream ſphæroidis ABCD. Hæc clara ſunt ex demonſtratione Archimedis libro de ſphæroidibus, & conoidibus parte 5.6.7. ſphæroidem idem deſcribendi modum mechanicè, & gratia commoditatis proponam ex Alberto Durerio.

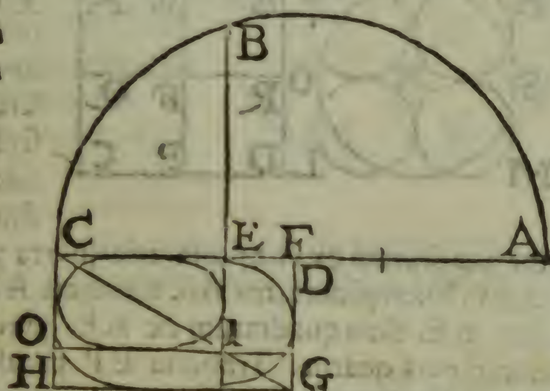


Deſcribe quadrangulum in duplo triplo, aut ſeſquialtero, & ſit in circulo ſupra AB. infernè CD. cuius latus CD. diuide in puncto E. per medium, ac poſito vno circini pede in puncto E. interuallo EC. ducatur per ſuperiorem partem vſque ad D. continget hic arcus lineam AB. deinde partire lineam CD. in octo æquales partes, & ex ſingulis diuiſionibus protrahe ſurſum parallelas in nuper deſcriptum arcum. Deinde fac iuxta quadrangulum ABCD. adhuc alium quadrangulum æqualis altitudinis, ſed longitudinis quantæ volueris cuius ſuperior linea FH. inferna vero GI. & ſeca id quoque in octo partes æquales, vt prius, poſtea producito ex ſingulis ſectionibus ſurſum lineas parallelas, deinde ex ſingulis inter

ſectio-

ſectionibus prioris arcus, quæ per octo lineas parallelas factæ ſunt, parallelas tranſuerſales per omnes perpendiculares longioris quadranguli, & per ſectiones illas longiorem parallelorum arcum produc lineam arcualem de puncto in punctum incipiendo ab angulo G. & finiendo in I, vt vides.

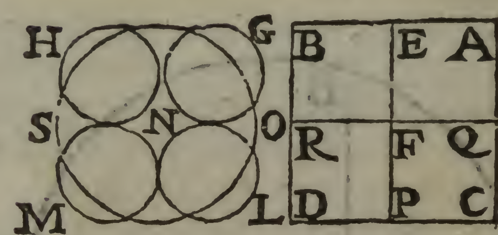
Datam ſphæroidem duplare, vel quadruplare. Probl. *19*.



SIt duplandum quadrangulũ ECIO. quod idem eſt, ac duplanda ſphærois, quod intra illud circum ſcripta eſt, & quadrangulum erit ſimile, ſimiliterq. poſitũ, quemadmodum, & ſphærois. Producatur latus quadranguli EC. vſque ad A. & ſit AE. dupla ipſius AC. ac ipſius AC. medio D. poſito circini pede, DA interuallo, deſcribatur circulus ABC. producaturq. IE. vſque ad circumferentiam B. & erit EB latus vnum rectanguli deſcribendi. Reſcindatur igitur ex CA, linea CF, æquali EB, & ducatur diameter CI. deinde per F. ducatur parallela ipſi EI. quouſque occurrat diametro CI in G. & per G altera parallela ipſi FC producatur, quæ ſit GH compleaturq. parallelogrammum FH. erit igitur hoc parallelogrammum ipſi CI. ſimile, ſimiliterq. poſitum duplum. Quoniam AE. EB. EC. ſunt tres lineæ proportionales ex 13. 6. Euclid. erit vt AE. prima ad EC. tertiam, ita parallelogrammum FH. ex EF. ſecunda

cunda (nam CF sumpta est æqualis EB.) ad parallelogrammum EO. supra tertiam EC. quod simile, similiterq. descriptum.

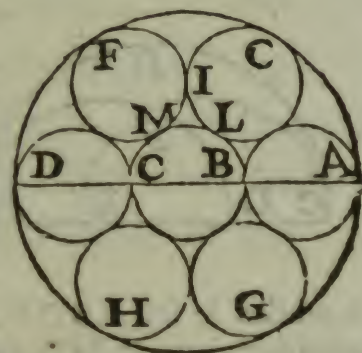
Si circuli diameter bifariam secetur, & ex vna parte circulus fiat hic erit totius pars quarta. Prop. 20.



RAtiones circulorum sequuntur rationes quadratorum eis circumscriptorum, vel inscriptorum, & quemadmodum, si quadrati diameter diuidatur quadratum ex vna parte, erit quarta parte totius, ita, & circulus; Exemplum latus AB. quadrati AD. diuidatur bifariam in E. dico quadratum ex AE. quod est AF. est AD quadrati pars quarta. Trahatur EP parallela, ipsi AC. & QR. ipsi AB, & erunt quatuor parallelogramma rectangula, & si aliter probari posset rationem recitabo apud Platonem in Memnone. Socrates enim puerum hoc modo docet. Sit bipedalis linea AB. dico suum quadratum esse quatuor pedum AQ erit vnius pedis, erunt dico quadrata QF. FR. sit & altera pars CD duos pedes longa vnum alta C. erunt enim duo quadrata CF. FD. tota igitur quatuor erit pedum. Sit ergo circulus OILM. cuius diameter ONS. diuidatur bifariam in N. ex quantitate ON. quatuor circuli inscribantur, dico quatuor hos circulos toti æquales esse. Ratio ex superiori pendet: nam & circuli se habent ad quadrata, vt eorum diametri.

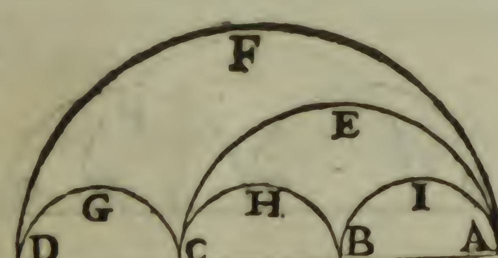
Cir-

Circulorum vacua metiri, quando maior minores contineat. Prop. 21.



SIT magnus circulus AEFDHG, cuius diameter AD, diuidatur in tres partes, & in eo fiãt tres circuli AB, BC, CD, & supra duo alij, & duo infra inscribantur; nam sex circuli æquales intra vnum inscribuntur ex 15. 4. Euclid. & ex præcedenti totus circulus nouem circulos cõtinebit: nam diameter trifariam diuisa est, sunt intus septem contenti, ergo omnia vacua duo erunt circuli cuius 3. pars erit scalprum EIF. cum suo residuo ILM.

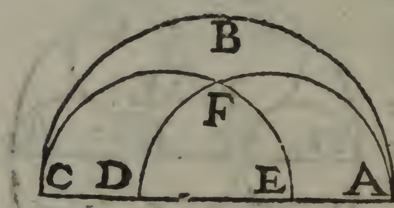
Arbilones per circulares figuras metiri. Prop. 22.



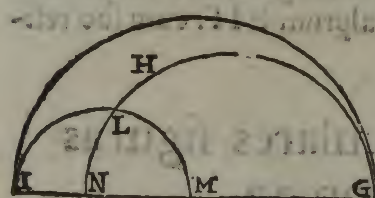
SIt arbilon primũ AFDGCHBIA. inuestigãdum quot circulos capiet, qualis AB. Ex præcedẽti semicirculus AFD nouem capiet semicirculos qualis AIB si substuleris AIB, BHC, CGD, erit arbilon reliquum sex

E semi-

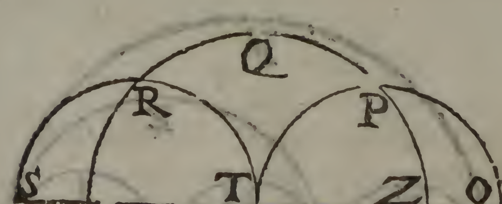
ſemicirculorum. Si quærimus arbilonem AFCHBI. erit ſemicirculus AEC quatuor ſemicirculorum qualis AIB, demptis duobus AIB, BHC, erit arbilon duorum ſemicirculorum. Si quærimus arbilonem AFDGCEA, erit ex iam dictis quatuor ſemicirculorum.



At ſi ſemicirculus maior ABC capiens duos ſemicirculos AED, EFC, vt docuimus in prima noſtri, dico arbilonem ABCFA eſſe æqualem duplato EFD, quod ex figura patet: nam quod replicatur in figura EFD deficit arbilon in ſua ABCF. Vel quarta pars dupli BEA. eſt æqualis ſemicirculo AFD. pars extera EFD eſt æqualis interiori corniculari angulo FBA.



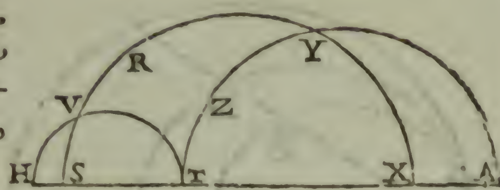
Idem eueniet in figura GHI: nam duo ſemicirculi GHLN, & MLI. per ſecundam noſtri capiũt aream continentis circuli GHI. Vnde duplatum MLN. eſt æquale arbiloni GHLIHG.



Poteſt etiam euenire, vt arbilon medium PQRT eſt æquale duobus extrinſecis circuli partibus OPZRS. ex ſuperiori ratione.

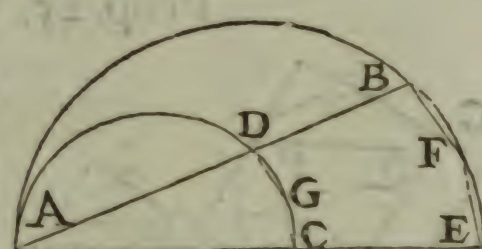
Idem

Idem eueniet in hac postrema, vt arbilon YZTVRY. sit æquale duobus circuli extrinsecis partibus A Y X, S V H.



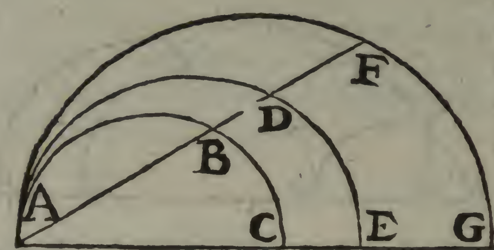
Si duo vel quamplures circuli in fine diametri se tangunt à contactus autem puncto ducatur linea eos secans arcus secti inter se similes erunt. Prop. 23.

Sint duo circuli ABE, ADC se mutuo tangentes in fine diametri A, & ducatur recta linea A D B, secans arcus ADC, in D, & ABE, in B, qui quidem arcus bifariam secentur, quia anguli in circulo oppositi per 22. 3. duo æquales rectis duobus in 2. ergo angulus B G C, & B F E æquales sunt cum eodem BAC angulo iuncto.



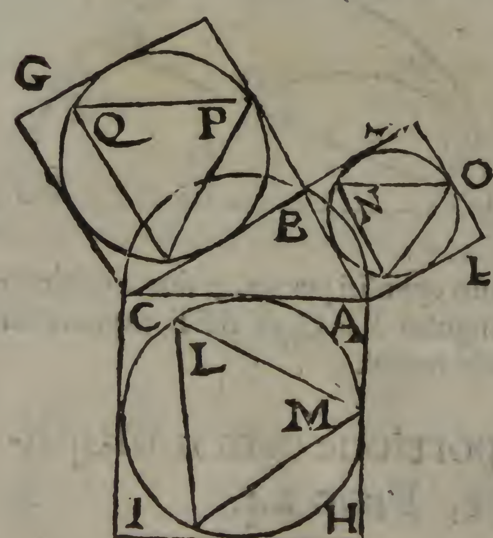
Data circuli portione eam multiplicare, Prop. 24.

Sit data circuli portio A B, quam volo duplare & sit, eius circulus A B C, & sit semicirculus A D E du-



plus dati. Per primam nostri, linea A B trahatur longius in D, & si voluerimus quadruplare sit circulus A F G quadruplus & linea A D in F extẽdatur, dico portionem DA ipsius BA duplam, & FA ipsius BA quadruplam cuius ratio pendet ex anteriori.

Ex duabus portionibus similibus vnã similem facere, vel subtrahere. Prop. 25.



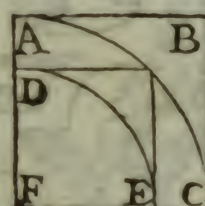
SInt duę inæquales circuli portiones PQ. ON. sed similes, & sit vnaquęque tertia circuli pars per 25. 3. Eucl. & sint P Q G, ODN; circa quos drscribantur quadrata B G, E B, vel eorum diametri, & iungantur ad rectum angulum ABC,& secundum AC describatur quadratum, & in eo circulus MLI, & sit ML latus æquilateri trianguli. Portio ML erit æqualis iam dictis

dua-

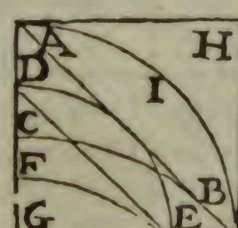
duabus portionibus per ea quæ in 3. Euclid. probantur. Vel ſi ex ML voluerimus portionem PQ ſubtrahere, è recto quadrato AC, ac ſupra AC ſemicirculo deſcripto, ponatur latus quadrati B C, & eius latus B A latus quadrati portionem ſimilem continentis. Et ſic poſſumus ex pluribus portionibus vnam facere, & omnia illa, quæ de integro circulo retulimus.

Datum ſemicuruilineum triangulum duplare, ſubducere, vel è duobus ſimilibus vnum facere. Prop. 26.

SIt ſemicuruilineum triangulum DGE, quod volo duplare, & ſit circuli quarta pars FDE, fiat etiam circuli dupli pars, & ſit AGC, circa eam quartam etiam quadrati partem circumſcribo ABCF, dico triangulum ſemicuruilineum ABCG. duplum eſſe DGE, Quia quadratum ABCF duplum eſt DGFE inſcripta portio proportionalis erit. Et ſic ſubtrahere, & ex multis vnam facere poterimus ex ſupradictis.



Eodem modo triangulum DEG duplare poterimus, quod eſt æquale iam dicto: nam quadrati dimidium B H A eſt æquale B A G, ſi dematur portio B I A, æqualis BCG. remanet triangulum B A G. æquale BHA, iam dicto.



dicto. Vnde si voluerimus prædictum EDF semicuruilineum triangulum duplare, duplato quadrante HABG, protractoq. diametro BA. circulus duplus BIA, qui erit BC describatur BC, & erit triangulum ABC duplum trianguli EDF.

IO. BAPT. PORTAE NEAPOLITANI ELEMENTORVM CVRVILINEORVM Liber Secundus.

AXIOMATA.

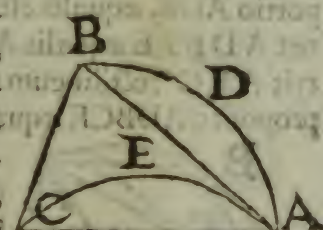
I.

SI eidem addideris, quod prius dempseris, quantitas æqualis erit.

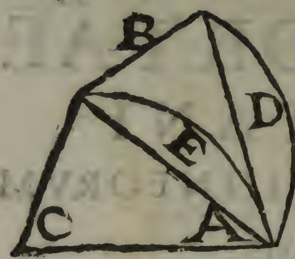
II.

Si nota quantitas à nota subtrahatur, quæ remanet nota erit.

Triangulum semicuruilineum ex æqualibus, ijsdemq. circumferentijs compositum quadrare. Prop. 1.

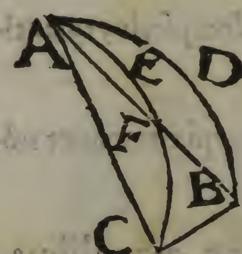


ESto triangulum quodpiam semicuruilineum A D B C E, Aequalibus nimirum ijsdemq. circumferentijs ADB, AEC, & recta BC basi constituta volo illud quadrare. Ducatur linea AB, & AC, aio aream trianguli semicuruilinei ADBCE esse æqualem triangulo rectilineo A B C. Quoniam circumferentia A D B est æqualis portioni A E C, ablata ADB, repositaq. in A E C æquale remanet triangulum rectilineum A B C semicuruilineo per primum axioma nostrum.

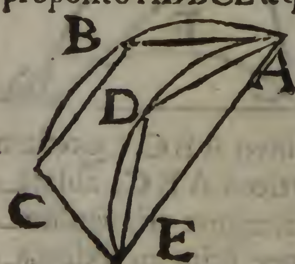


Vel fiat triangulum æquale rectilineum ABC, & ſit AFC ex 22.1. Euclid. erit ſemicuruilineum triangulum ADBCE, æquale triangulo ſemicuruilineo A E C F dempta communi portione A E C remanet rectilineum A F C triangulo ſemicuruilineo æquale ADBCE.

Alter Caſus.



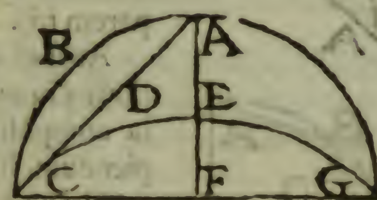
At ſi triangulum ADBCE anguſtius erit, & portionis lineæ neutiquam intactas circumferentias relinquent, ſed per medium tranſibunt, eadem operatione idem aſſequi poterimus. Sed quo res dilucidior euadat, rem exemplo complectemur. Eſto triangulum ADBCE, & circumferentia ADB æqualis ſit AFC, trahanturq. rectæ lineæ AB, AC, & ſecet AB baſis ADB circumferentiam AEC, aio rectilineum ABC æqualem ſemicuruilineo ADBCE. Quoniam portio ADB, æqualis eſt AEC dempta communi AEF, remanet ADBFE æqualis AFC, apponatur vtrique areola FBC, erit ABC rectilineum triangulum ſemicuruilineo triangulo propoſito ADBCE æquale.



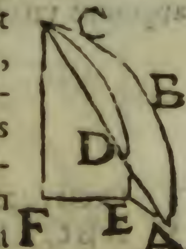
Vel ad eadem præſtanda poſſumus eaſdem circumferentias in plures partes diuidere, nempe binas, ternas, quaternas, vt ABC circumferentiam in AB, BC, & ADE in AD, DE. Vnde excluſæ partes AB, BC, incluſis AD, DE erit area rectilinea ABCEDA æqualis ſemicuruilineo ABCEDA.

Trian-

Triangulum semicuruilineum ex varijs circumferentijs compositum quarum altera alterius dupla sit quadrare. Prop. 2.

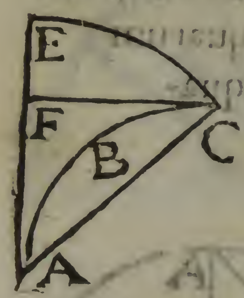


ESto triangulum semicuruilineum ABCDE cuius circumferentia E D C sit circuli dupli ipsius ABC. Sed EDC sit octaua pars circumferentiæ sui circuli G E D C, circuli vero A B C quarta. Aio triangulum semicuruilineum ABCDE rectilineo inuestigari posse parem. Rem ita moliemur. Completa circumferentia C E, sit CEG, & coniungatur AC, mox portionem CEG diuidatur per medium, & sit diuisionis linea E F, dicò triangulum AFC semicuruilineo triangulo parem esse. Quoniam tota portio ABC æqualis est dimidiæ ECF, id propterea dempta A B C portione reposita E F C semicuruilineum ABCE, abijt in triangulum rectilineum A C F.

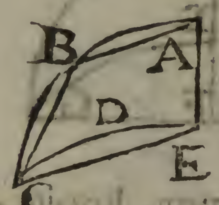


At si circulares lineæ magis cohærebunt, vt circumferentiarum bases introrsum se secent, eadem erit operatio, & demonstratio, vt in prima propositione. Productis lineis portionis A C, & semiportionis EFC triangulum rectilineum AEFC semicuruilineo par erit. Quoniam spatia ipsarum portionum ABC, EFC æqualia sunt, ablata interiacente portione D C, quod reliquum est ABCD ipsi EDCF æquale erit, addita vtrique areola AED, erit totum triangulum rectilineum AEFC toti semicuruilineo A B C D E æquale, nam quanta pars ex

demptione abijt, tota ex repositione substituta est.



Vel potest transpositis lineis alio modo triangulum semicuruilineum constitui sit circumferentia dupli CDE retro CBA ante, tunc ex puncto C. super basim AE cadat perpendicularis CF, & connectatur CA, & sic triangulum semicuruilineum ABCDE rectilineo FCA parem iri. Ratio in superiori.



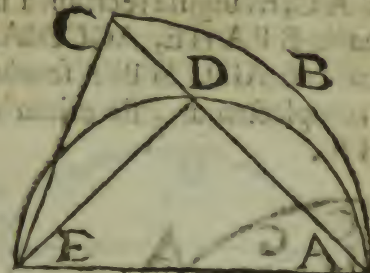
At si vt diximus ex varijs, & inæqualibus circumferentijs orbiculata triangula composita erunt, tunc mente concipiendum, si circulus duplus alteri sit, subdupli duæ circumferentiæ partes, vni dupli respondent, si quadrupli quatuor, & sic deinceps. Esto verbi gratia circuli dupli circumferentia EDC, & sit octaua suæ circumferentiæ pars respondet duobus octauis subdupli circuli ABC. Diuidatur ambiens linea ABC bifariam in B, & trahatur AB, BC, EC, & erunt duæ AB, BC portiones, vni EC æquales; & sic vna EDC, duas illas AB, BC absumet. Vnde si triangulum semicuruilineum duabus octauis circumferentiæ partibus decrescimus, AB, BC augemus vna EDC, & sic par pari referemus.

Alter Casus.

Potest & aliter euenire; sit triangulum semicuruilineum ABCED, & sit ABC quarta dupli circuli, & ADE semicirculus subdupli, docebimus quomodo possis rectilineũ triangulum æquale semicuruilineo facere. Trahantur ex puncto per medium circuli ADE vsque ad C, & sit linea ADC, & linea DE. Erit triangulum semicuruilineum ABCED

æquale

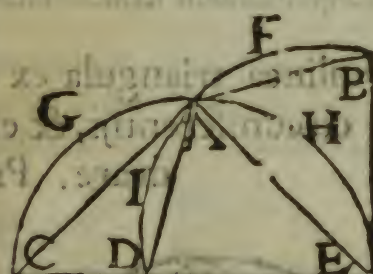
ęquale rectilineo DCE. Quoniam portio A B C est dupla ipsius AD per 19. primi nostri, & huic nempe portioni AD æqualis DE. dematur dimidia portio ABCD, addatur DE compar, remaneatq. communis areola DCEF, vtrique sic enim rectilineum



triangulum DCE æquale semicuruilineo ABCED, & sic excessus vnius alterius defectu rependetur. Sic & in alijs notis circumferentijs quadruplis quintuplis eodem Methodo vti poteris.

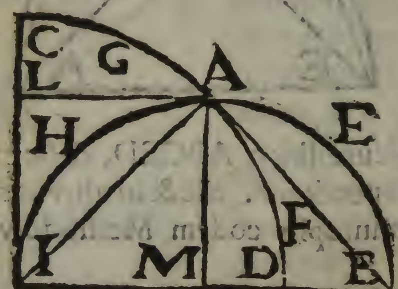
Semicuruilinea triangula ad verticem constituta ex eisdem, & æqualibus circumferentijs, vel ex æqualibus nota quadrare. Prop. 3.

SI duo semicirculosa triangula ad verticem constituta ex eisdem, & æqualibus circumferentijs fuerint ductis à vertice ad bases rectis lineis, erunt rectangula circulosis ęqualia. Si primam huius libri leges non secus esse inuenies, quã diximus. Si acciderit, vt circumferentiæ eædem ad verticem



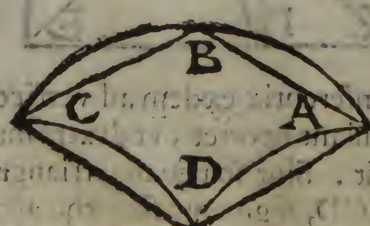
sint inæquales, sed in id conueniant oportet, vt dextra interior sinistro exteriori æqualis sit. Sint inæqualia triangula se inuicem decussantia BAE, ACD, segmenta sint æqualia, vt BFA, AID, & EHA, AGC, tunc protractis rectis BA, AD,

AE, AC, triangula rectilinea BAE, ADC, erunt circulosis æqualia BFAHE, AGCDIA. Quoniam segmentum BFA æquale est AID. Si BFA seorsum expellimus,& AID sua vice complectemur, sic etiam reijcimus AGC reponimus EHA.



At si fuerint duo semicuruilinea triangula BE--AFD, & AGCIH constituta ad verticem A ex inæqualibus circũferentijs notis quarum DAC sit circulus duplus ipsius BAI. Trahantur duæ lineæ perpendiculares ex A ad CI. & sit AL, & AM ad BI. & binæ aliæ rectæ BA, AI, dico rectilinea triangula ALI, ABM, simul iuncta æqualia esse. Semicuruilineis BEAFD, CGAHI. Quoniam periferia DAC est circuli dupli quarta, & BAI subduplus semicirculus, duæ semiportiones AFDM, AGCL, absument duas portiones BEA, AHI. demptis igitur BEA, AGCL, repositisq. AHI. AEBM, rectilinea triangula BAM, LAI, æquiualebunt semicuruilineis iam dictis.

Curuilinea triangula ex eisdem & æqualibus circumferentijs, & ex varijs notis quadrare. Prop. 4.

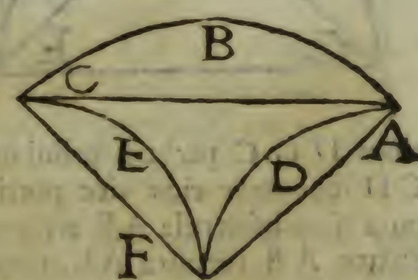


Esto curuilineum triãgulum ex tribus circumferentijs ABC, CD, DA, eiusdem curuis, sed ABC, dupla AD, DC constitutum quod quadrare intendimus. Dico protra-

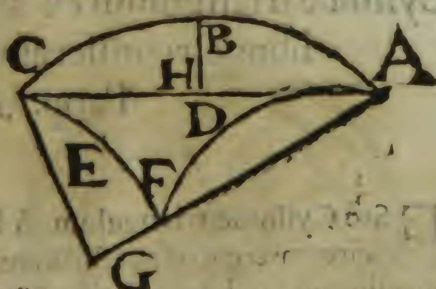
ctis

ctis æqualibus ſubtenſis AB, BC, CD, DA quadrilaterum, rectilineum ABCD, eſſe æquale curuilineo ABCD. Quoniam demendo portiones AB, BC, addendoq. AD, DC, quæ ſimul æqualia ſunt voti compos fies, vel aliud dicimus .

Poterimus alio modo id aſſequi. Protrahatur linea AC, & binas AE, ED, & lineas CF, FD, vt ſemiportio AED ſit æqualis A B G, & DCF, & ipſi BGC, nam duæ portiones dimidiatæ ADE, CDF æquiualent vni integræ A B C. Vna hac dempta, his additis quod diximus eueniet .



Eodem modo curuilinea triangula ex inæqualibus circumferentijs, ſed altera alterius exempli cauſa ſit dupla . Sit curuilineum triangulum A B C E F D ex inæqualibus circumferentijs, ſed A B C dupla ſit ADF, & F E C ſubtenſis lineis A C, A F, F C erit quadratum nempe binæ portiones ADF, EFC æquipollent ſimplici A B C, vnde illa dempta, his additis triangulum rectilineum FAC æquipollet curuilineo propoſito.

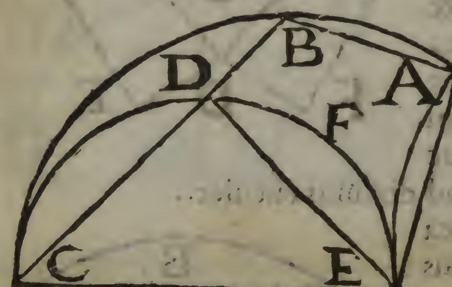


Poteſt contingere, vt triangulum conſtituatur ex varijs circumferentijs, & inæqualibus, vt F E C ſit dimidia ipſius A B C, & ipſa ABC dupla ipſius A D F, ſic facta ſemipor-

tio-

tione CFG, æquali BHC, & ſubtenſis A F portio A D F erit æqualis ABH. Vnde hac dempta, illis ſubditis triangulum rectilineum ACG erit æquale curuilineo ABCEFD.

Alter Caſus.



Esto curuilineũ triangulum ABCDFE propoſitum quadrãdum, & circumferentia circuli ABC ſit dupla EFDGC, diuidatur circumferentia EDC bifariam in D, & trahatur CDB erit ceratoide triãgulum BHCGD æquale portioni DGC per 19. primi noſtri. Vnde dempto BHGCD reponatur eius vice portio EFD æqualis DGC, & quia circumferentia AE eſt æqualis, & eadem ipſius AB, ablato AB repoſita AE, trapezuim rectilineum ABDE erit æquale propoſito curuilineo triangulo ABHCGDEF.

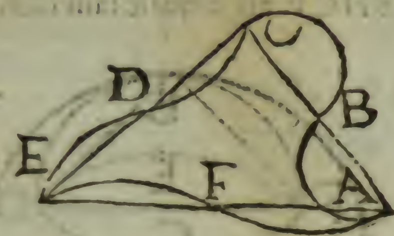
Cyſſoide triangulum ex æqualibus, & inæqualibus circumferentijs quadrare.

Prop. 5.

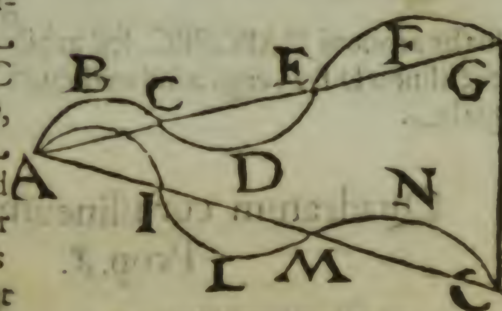
Esto Cyſſoide triangulum AFC ex tribus inæqualibus circumferentijs conſtitutum ABC, CDE, EFA curuilineum, & latera diuiſa, & æqualibus circumferentijs

con-

conſtituta, vt A B, ſit æqualis B C, & C D, ipſi D E, & E F ipſi FA, vnde tractis lineis rectis A C, C E, E A, & demptis tribus circumferentijs BC, DE, FA, & alijs tribus repoſitis A B, C D, E F, rectilineum triangulum A C E æquale eſt cyſſoidi ABCDEF.



Sit quoque ſemicyſſoide triangulum quadrandum A B C D E F G I L M N O, ex varijs circulorum circumferentijs, ſed tamen binis ſemper oppoſitis æqualibus conſtitutum videlicet G F E maioris circuli circumferentia, quam E D C, & E D C maior C B A, ſed tamen G F E æqualis O N M, & E D C, I L M, & C B A, A H I, ſi à puncto A ad baſim G O lineæ rectæ trahantur, totum aſſequeris, ratio pendet ex ſuperiori.

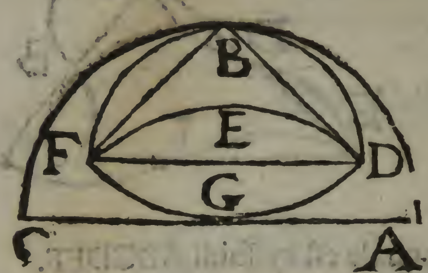


Arbilonem quadrare. Prop. 6.

Esto arbilon A H E C D B quadrandum, quia portio A H eſt dupla A B, & A B eſt æqualis ſemiportionis B C D, ergo ablata A B H, & repoſita

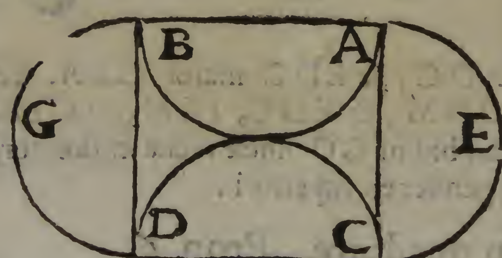
posita BGD, & ablata HCE reposita DCF, rectilineum GBHCF est æquale iam dicto arbilioni.

Potest & alio modo probari. semicirculus ABC est duplus semicirculi DBF, ergo vacuum ABDGFBC. est æquale semicirculo, dematur ex vtroq; portio DEF, DGF, ergo lunula DBFE est æqualis arbiloni DABGFBC, sed arbilon est æquale triangulo rectilineo DEF, ergo arbilon dictum triangulo DBF, est æquale.



Quadratum curuilineum quadrare.

Prop. 8.

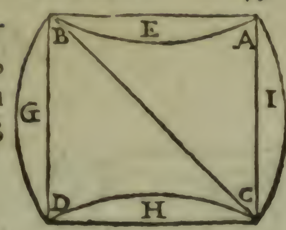


ESto quadratum curuilineum AFBGDFCE. trahantur quatuor lineæ ex angulis AB, BD, DC, CA, dico quadratum rectilineum ABCD curuilineo iam dicto præstabit. Quoniam sunt quatuor semicirculi æquales inuicem, tollantur AEC, BGD, reponantur AFB, CFD, sic rectilineum curuilineo æquale erit.

Alter Casus.

POtest & quadratum aliter fieri, ex quatuor etiam rectis angulis, vt diximus ABC. Quoniam portiones æqua-

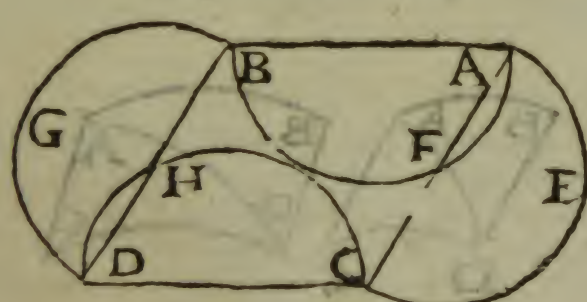
æquales ſunt, & ex æqualibus circulis, ablatis portionibus A I C, B G D, repoſitiſq. A E B, C H D rectilineum quadratum ABDC, curuilineo A E B G D H C I A æquipollebit.



Corollarium.

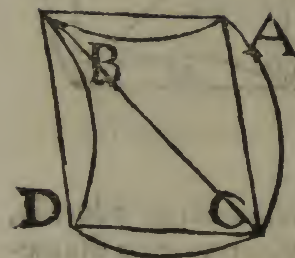
HInc patere poteſt quadratum curuilineum ex aduerſis, & conuerſis circumferentijs conſtitutum recta diameter bifariam ſecat, latus A B, lateri A C æquale eſt, & baſis B C communis vtrique, ergo triangulum C A B triangulo B D C æquale erit: igitur bifariam ſecat, & vtrumq. ex conuexo, & concauo æquali latere conſtat.

Rhombum curuilineum quadrare.
Prop. 8.



ET Rhombus curuilineus A F B G D H C E quadrabitur, ductis ex angulis rectis lineis AB, BD, DC, CA, nam demptis ſemicirculis A E C, D B G, repeſitiſq. AFB, C H D, demptiſq. portionibus HDAF, rectilineum Rhombum curuilineo æquabitur.

Alter Casus.

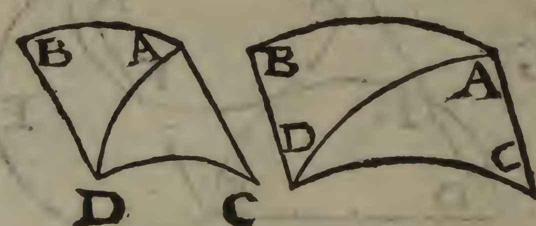


POteſt eſſe Rhombus alio modo ex æqualibus circumferentijs AB, BD, DC, CA, & quoniam portiones æquales ſunt, duabus demptis AC, CD, totidem repoſitis AB, BD erit rectilineo æqualis.

Corollarium.

EIuſmodi etiam Rhombos recta dimetiens æqualiter ſecabit; nam hinc inde duo æqualia triangula conſtituent.

Rhombos, ſeu Rhomboides ſemicuruilineos quadrare. Prop. 9.

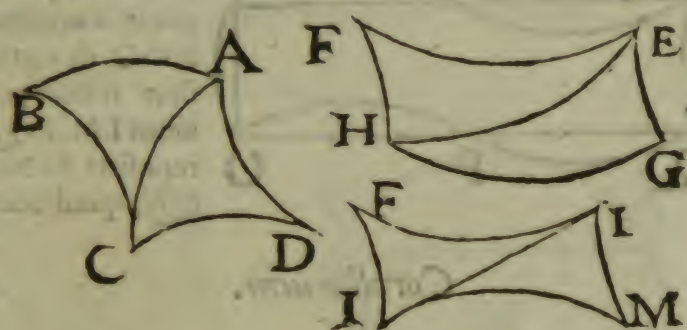


SEmicuruilineus Rhombus, & Rhomboides facilius quadrabitur: nam portione vna dempta, altera repoſita, æquales erunt curuilinei rectilineis.

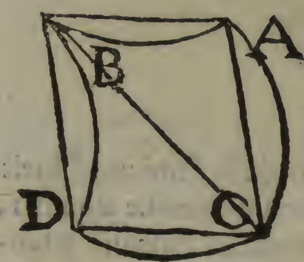
Corol-

Corollarium.

SEd in iſtis, qui ex iſoſcelibus triangulis ſemicuruilineis conſtituuntur curua diameter circumferentiæ æqualis, & eos bifariam ſecabit; nam in duo æqualia iſoſcelia triangula diuiduntur ſemicuruilinea, vt ABD, ADC.

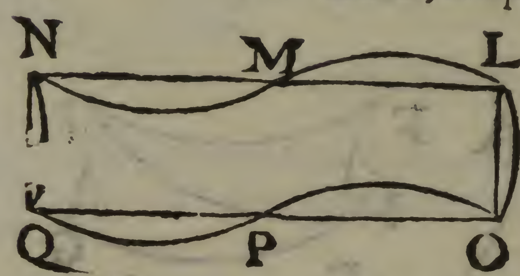


Poſſunt & alio modo Rhombos, & Rhomboides in Iſoſcelibus triangulis conſtitutos ex tribus conuerſis, & vna auerſa diametro per mediam diuidere, vt in Rhombo A B C D. Rhomboide E F G H, cum diameter A C, E H eos bifariam diuidat in duo Iſoſcelia æqualia A B C, A C D, & E H G, E H F, & in Rhomboide ex quatuor conuerſis conſtituto diameter recta etiam I L in duo ſemitriangula æqualia diuidit ex oppoſitis angulis ducta.



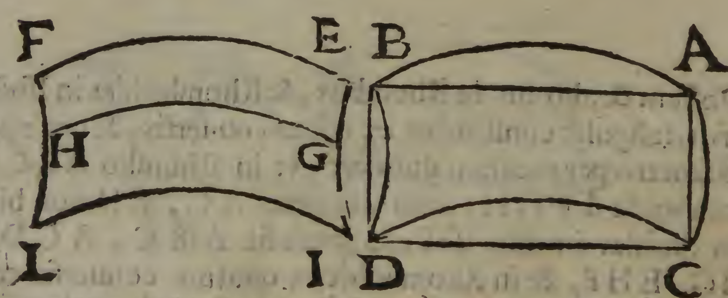
Altera parte curuilinea, & ſemicuruilinea quadrare. Prop. 10.

ALtera parte longiora quadrabis omnia, vt quadrata, duobus ſemper portionibus oppoſitis ablatis, & repoſitis, vt in ABCD.



Erit altera ſpecies altera parte longioris curuilinei LNOQ demptis ſcilicet tribus portionibus LM, PQ, OL, repoſitis MN, OP, QN, quadrabitur.

Corollarium.

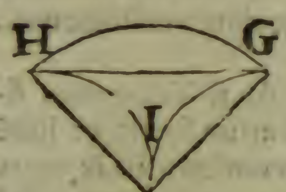


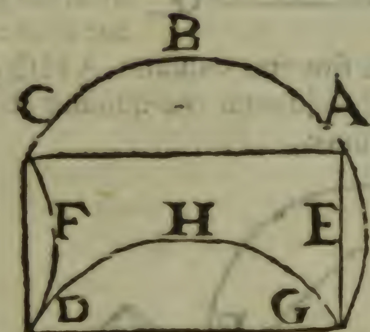
AT reliquas ſpecies diuides non dimetiente ex angulo ad angulum ducta, ſed per medium vtrinq. latera parallela, vt in EFIL dimetiens GH.

Pe-

Peleces quadrare. Prop. 11.

POſſunt peleces multifariam variare ex varijs circulorum circumferentijs, & primo ex partibus, cuius partes circumferentiæ dimidij circuli A B C, aliæ duæ partes ex duabus quartis eiuſdem circuli A E D, D F C, vt demptis illis, his repoſitis, rectilineum quadratum peleci æquale erit.

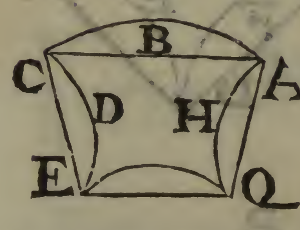




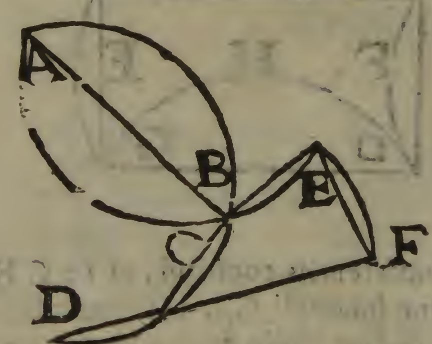
Poteſt & ex duplicis circumferentijs conſtitui, vt ſit G H quarta dupli, duæ vero quartæ ſubdupli G I, I H, quæ additæ rependent ablatum G H, eodem modo ex quadrupla eueniet. Pelecis ex inæqualibus, ſed eiſdem circumferentijs, & varijs, vt Pelecis G E A B C F D H quadranda portio A B C ſit æqualis G H D, & D F C, G E A, demantur A B C, reponantur G H D, D F C, & erit quadrilaterum rectilineum A C G D æquale ſupradictæ Peleci.

Trape-

Trapezia curuilinea ex æqualibus, & inæqualibus circumferentijs conſtituta quadrare. Prop. 12.



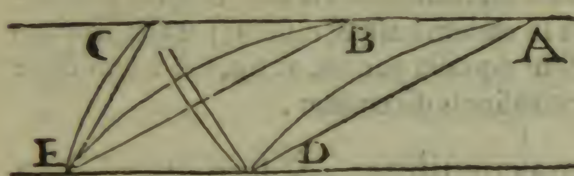
SInt Trapezia curuilinea ex quatuor, vel pluribus circumferentijs conſtituta, vel omnibus inæqualibus, vel tribus, aut duobus, dummodo inter eas ita conueniant, vt tres, duæ, aut plures poſſint, quantum vna, aut aliæ: nam ſit portio A B C tripla, & ſint tres æquales A H Q, Q F E, E D C, dematur maior, addantur tres minimæ, & coæquabitur rectilineum curuilineo.



At ſi Trapezium figuratum fuerit, vt ijſdẽ circumferentijs, & æqualibus conſtituatur, ſed cũ alterũ altero longius ſit, & quantum in altero deficit in altero ſuperſit, minus addatur ſuperfluo, & fiat æqua compenſatio. A B duæ portiones demantur, addantur duobus alijs B C, C D, & quia pars E F ſuperabit, deficit vero E B, huic addatur illius vice, ſic rectilineum B E F D C B curuilineo æquabitur.

Trian-

Triangulum Iſoſcele curuilineum,& parallelogrammum ſemicuruilineum in eadem baſi conſtituta,& eiſdem parallelis,parallelogrammum triangulum duplum erit, & rectilineis æqualia erunt. Prop. *13*.

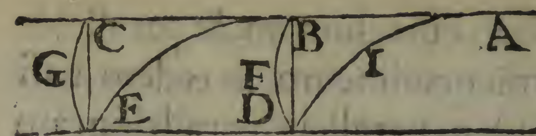


SIt triangulum Iſoſcele ſemicuruilineũ DCE, & parallelogrammum ſemicuruilineum ABDE in eiſdem parallelis ACDE dico parallelogrammum in eadem baſi, & eiſdem circumferentijs conſtitutum eſſe triangulo duplum. Quoniam portio DC ipſi CE æqualis, dematur EC, addatur DC, erit triangulum rectilineum DCE curuilineo æquale. Et quia portio AD ipſi BE æqualis, dematur BE, addatur DA erit rectilineum parallelogrammum ABDE ſemicuruilineo æquale, ſed rectilineum ABDE triangulo DCE duplum eſt; quia in eadem baſi, & eiſdem parallelis conſtituta per 41. 1. Eucl. ergo parallelogrammum rectilineum curuilineo triangulo duplum.

Parallelogramma ſemicuruilinea in eadem baſi, & æquidiſtantibus circumferentijs conſtituta, & inter parallelas æqualia ſunt. Prop. *14*.

SInt duo parallelogramma BFDCGE, & AIDBHE in eadem baſi DE, & in eiſdem parallelis rectis AC,

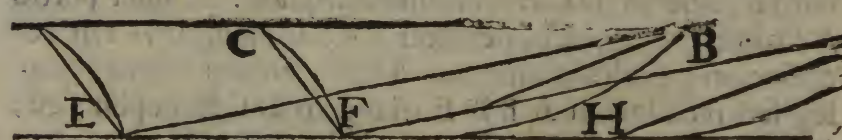
DE



D E conſtituta, dico inuicem eſſe æqualia: trahantur rectæ A D, B E, E C, quia portio BFD eſt ęqualis CGE dematur CGE, reponatur B F D, rectangulum parallelogrammum curuilineo æquale. Idem dicendum de altero parallelogrammo AIDBHE curuilineo æquale eſt rectilineo ADBF, & quia parallelogramma rectilinea in eadem baſi, & eiſdem parallelis conſtituta ad inuicem ſunt æqualia per 36. 1. Euclid. Idem & de parallelogrammis curuilineis dicendum.

Parallelogramma curuilinea, & ſemicuruilinea cum æqualibus baſibus, & eiſdem circumferentijs, & eiſdem parallelis conſtituta inuicem ſunt æqualia.

Prop. 15.



SInt duo parallelogramma ſemicuruilinea, & æquidiſtantibus circumferentijs AH, GB, & CF, DE, & æqualibus baſibus conſtituta FE, GH, & in eiſdem parallelis A D, H E dico eſſe inuicem æqualia, trahantur rectæ AH, BG, CF, DE, AF, B E, quia A H portio æqualis eſt B G, dempta AH repoſita BG, erit rectilineum AHBG curuilineo æquale, & idem de alio CFDE, ſed rectilineum AHBG curuilineo æquale, & idem de alio C F D E, ſed rectilineum CFDE in eadem baſi cum rectilineo ABFE, & ABFE in eadem cum A H B G, ergo inuicem æqualia per 26. 1. Euclid. ergo &c.

Paral-

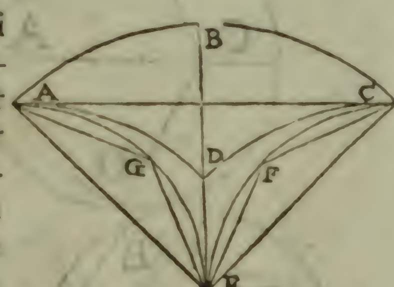
Parallelogramma ſemicuruilinea in eiſdem parallelis conſtituta, & ex diuerſis circumferentijs videlicet duplis dari poſſunt rectilineis æqualia.

Prop. 16.

SIt parallelogrammum ſemicuruilineum E A B C F D E, & ſit portio CBA dupli, ſubdupli autem ſemicirculus F D, dico quadrari poſſe, trahatur linea C A, & F D, D E, quia duæ portiones ſubdupli F D, D E valent quantum vna ſubdupli CBA, dematur C B A, reponantur duæ ſubdupli F D, D E, rectilineum E A C F D valet quantum ſemicuruilineum.

Triangulum tricuſpidale quadrare.

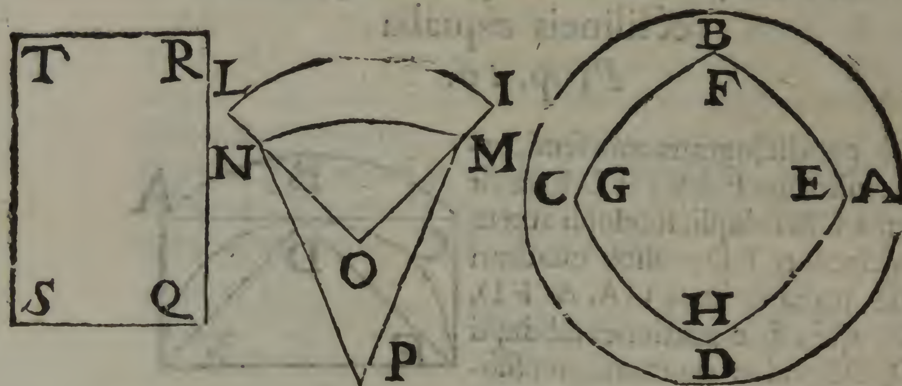
Prop. 17.



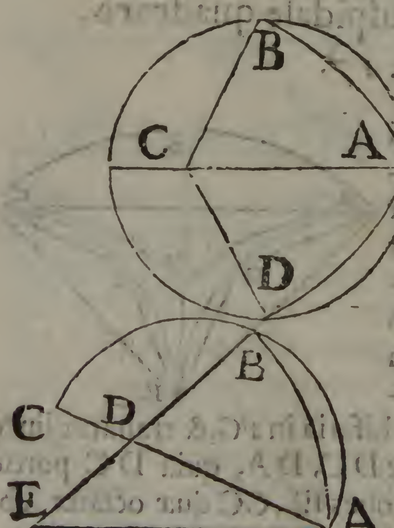
EX quarta noſtri ſecundi repræſentetur figura AB-C F E G, à medio AC trahatur linea BE, & linea EB ſignetur in linea BE, linea CD ex eadem dupli circumferentia idem ex altera parte, dico triangulum tricuſpidale ADCFEGA quadrari Poſſe, diuidantur EC, EA bifariā in FG, & trahātur lineę E F, F E, E G, G A, ſic, & lineæ D C, D A, quia D C portio eſt octaua pars ſui circuli, portiones EF, GC duæ octauæ ſubdupli æquipollent vnam dupli, ſic eam demendo, has addendo,

do, trapezium EFCD rectilineum respondet curuilineo EFCD, idem de alia parte dicendum, & multifariam potest euenire.

Coronas quadrare. *Prop. 18.*

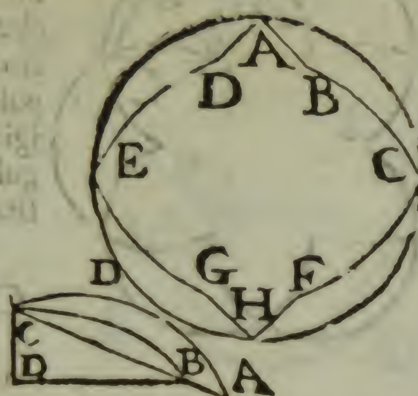


SIt quadranda Corona ABCDEFGH, pono eius quadrantem ILO, & ibi comparem octauã partem circuli dupli MNE, tollatur cõmune MNO, remanet tricuspidale triangulũ quadrilaterũ MONP æquale quartę parti coronę IMLN, quæ æqualis ABEF, quadruplicetur cuspidale triangulũ, & erit ipsius area QRST æqualis coronæ propositę.

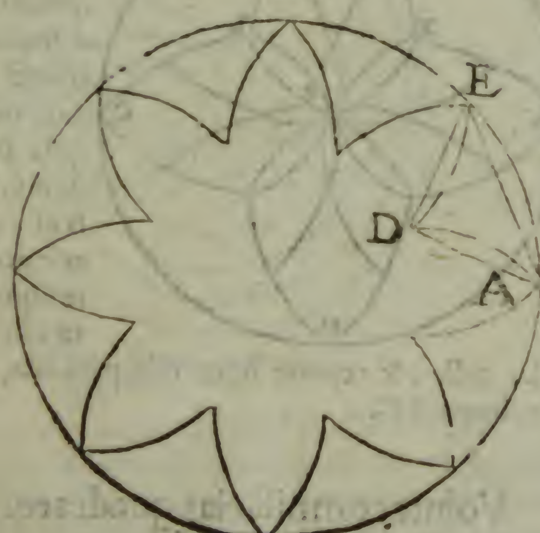


Eodem modo quarta pars semicirculi dupli ABE absumit dimidium circulũ ABC subduplum, tollatur commune triangulũ ABD, remanet ADE triangulum rectilineum æquale Lunæ AB, & circuli BDC, quo duplato æquipollet coronę ABCD.

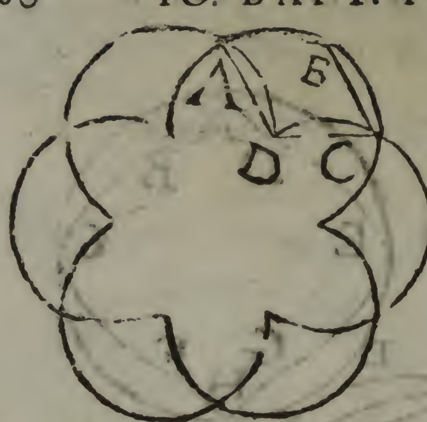
Sit portio ADCB, æquipollet dimidiæ duplæ i B C D, tollatur commune BC, remanet triãgulum BCD æquipollens semilunulæ A B-CD, sic quatuor triãgula BFGD absumunt coronam CBADEGHF.



Per quartam nostri secundi quadratur triangulum curuilineum A D E per rectilineum quadrangulum A B C D, sex igitur eiusmodi quadrãgula totam coronam absorbent.

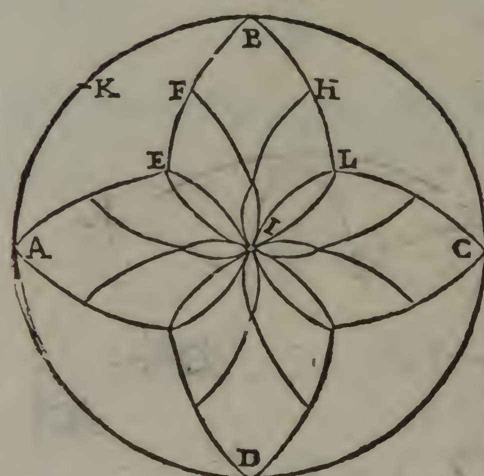


Eodem modo alia coronæ species quadratur, & sit eius pars AED, cuius maior circulus AE sit duplus AD,



& ſit A D octaua pars ſui circuli , & A E ſui circuli , duæ igitur portiones A D, D E æquipollent vni maiori : octo igitur eiuſmodi triangula reſpondent propoſitæ coronæ .

Corona ſemiquadranda .



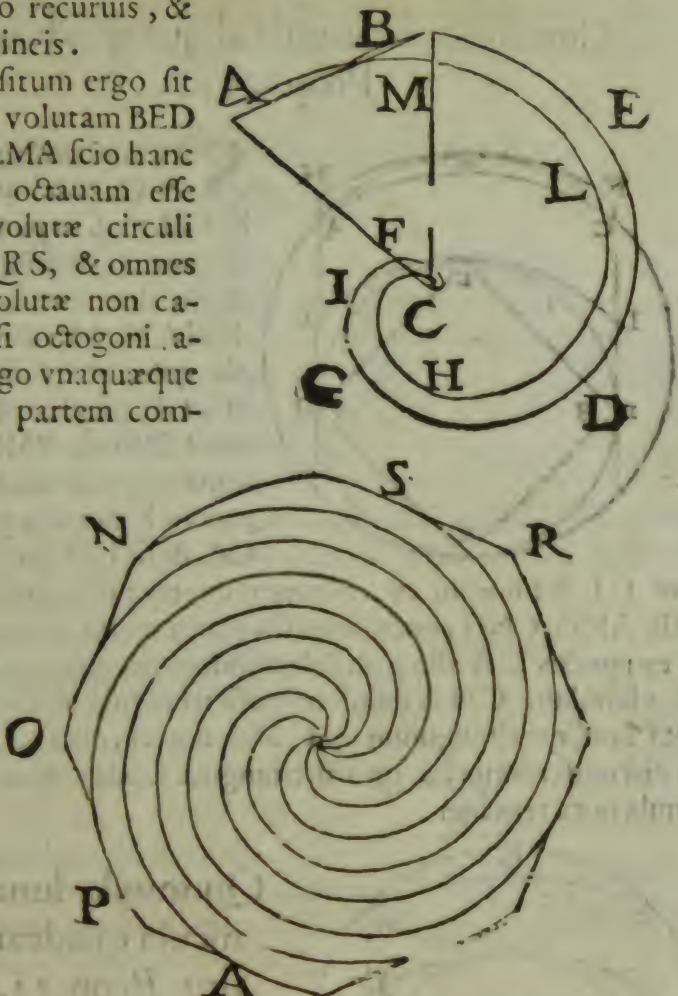
ESto circulus ABCD cuius quadrans A-BI, triangulum ABE notum eſt, quia AE, EB æquales ſunt circumferentiæ A K, K B, reliqua pars quarta E F B H L I, quia B F , B H æquales ſunt G F, G H, tolle F B, B H , repone G F G H erit nota pars F B, H G, reliqua pars E F, I G nota eſt, quia æqualis FE, E I , tolle , & repone nota erit pars illa, remanent ergo 4. portiones I G.

Volutas omnifarias quadrare. Prop. 19.

EST voluta figuræ ſpecies in cocleæ modum ſinuata , cuius ambiens perpetuo flexu ducitur binis in ſe quodammo-

dammodo recuruis, & refractis lineis.

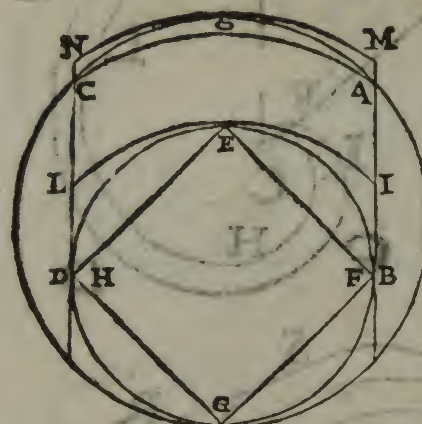
Propositum ergo sit quadrare volutam BED GIFCHLMA scio hanc volutam octauam esse partem volutæ circuli NOPQRS, & omnes circuli volutæ non capiunt nisi octogoni aream, ergo vnaquæque octauam partem com-



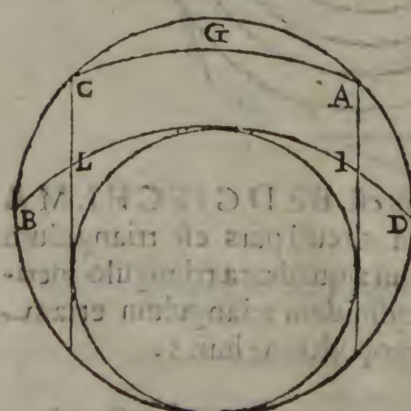
plectitur: vna igitur volutæ pars est BEDGIFCHLMA est octaua circuli pars, & octaua circuli pars est triangulum ABC, ergo tota proposita voluta quadrata triangulo metitur. Possumus, & hoc modo cyssoidem triangulum etiam quadrare, quod vidimus in 5. propositione huius.

Curui-

Curuilinea triangula aliqua quadrare. Prop. 20.



SIt circulus duplus AMNC, ſubduplus vero EFGH, ſeq. in puncto contingant G abſcindantur à duplo duæ portiones quadrati CN, AM, & à ſubduplo quatuor quadrati E F, FG, GH, HE remanent vacua CDEBA, BMG, GNH æqualia quadrato E F, G H puncto E ducatur parallela CA, & ſit L O quadrangulum C L A I notum eſt, remanent quatuor triangula L D E, EIB, AMO, CNO puncto dupli circumferentia ducatur MN, & ex punctis C A alia parallela eiuſdem circumferentiæ CA, dico lunulam C O A quadrari poſſe triangula N C O, OAM nota ſunt, quadrangulum N C M A notum, quia ex parallelis circumferentijs, à quo ſi triangula ſubducantur C O A lunula nota remanet.



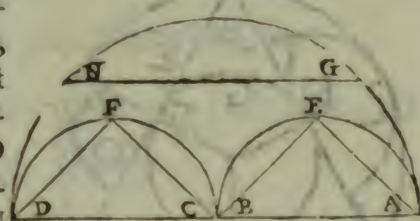
Quomodo lunæ cornicula quadrari poſſint. *Prop.* 21.

REmaneat ſuperior deſcriptio, & in ſemicirculo B G D deſcribatur dupli circumferentia BLID à punctis BD, lunula igitur BG-

BGADILB nota eſt, lunula parua nota eſt CGA, quadrangulum CLAI notum etiam ex anteriori, remanent ergo corniculi CBL, AID etiam noti.

Trapezia multa curuilinea quadrare.
Prop. 22.

Poſſumus quadrare Trapezium AGNDFCBEA, quia ſemicirculus AGND eſt quadruplus AEB per 20. noſtri, duo ſemicirculi AEB, CFD valent quantum arbilon AGNDCBA, dematur portio GN

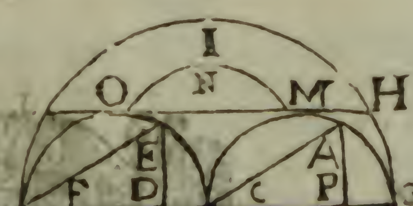


quarta circuli pars, & 4. portiones AE, EB, CF, FD, remanent duo triangula rectilinea AEB, CFD æqualia trapezio curuilineo iam dicto.

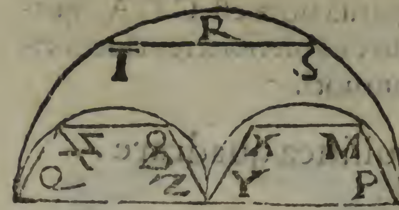
Eadem ratio erit in trigono. ſit trigoni portio LIN, & duo circuli FED, CAG, à quibus duæ portiones FE, CA, & duæ dimidiæ ED, AG, quæ vnam integrant, altera erit OIM, arbilon FLINGMCO

valet duos ſemicirculos, à quibus ſi tres dempſeris portiones, tres item ab arbilone, vacua FLO, OKM, MNG, NMI, IOL valent duo trigona FED, CAB.

Eadem ratio erit in exagono, & trigono, nam in trigono in circulo GHILF, duo trigona APC, DEF, æquipollent vacuis GHM, MOC, OLF, HILONM, & in exagono PSRTQ,

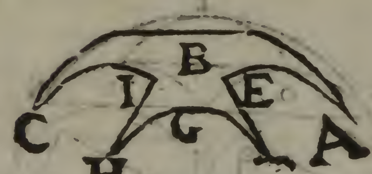


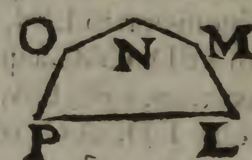
duo



duo ſemiexagona P M X Y, & Z 8 ✕ Q, valet vacuum P S T Q Y Z, in linea H L, tangens circumferentiam circulorum eſt latus trigoni æqui lateri per 12.13.Eucl.

Circulus A B C, eſt quadruplus D A E, ergo pars tertia circuli A B C, quæ eſt A B C, eſt vnius circuli, & tertiæ partis, pars eius tertia eſt F G H, reliquum ergo erit corona A B C H G F dematur duo quadrantes circuli A E F, C H I, remanet vacuum AEFGHICBA, quantitatis dimidij circuli, & quia



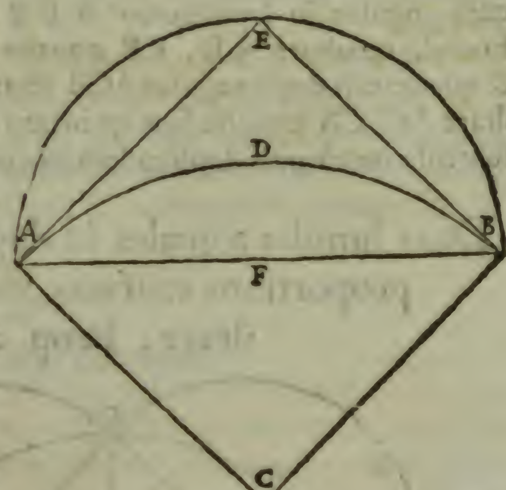


octaua pars circuli maioris, valet quatuor minoris dematur portio B ex maiori, & 4. 8. ex minori L M, M N, N O, O P, ergo rectilineam LMNOP, valet trapeſium AEFGHICBA.

IO. BAPT. PORTAE NEAPOLITANI ELEMENTORVM CVRVILINEORVM Liber Tertius.

In quo de Circuli quadratura agitur.

Lunulam ex dupla, & subdupla proportione quadrare. Prop. *1*.



DEscripto duplis circuli quadrãte his characteribus distinguatur ADBC, cuius subtensam AB, scinde bifariam, & punctus scissionis adamussim medius F charactere sortiatur, in quo circini pede infixo ex FA interuallo circum ducto semiambitum subdupli AEB ducito, aio triangulum rectilineum ABC interceptæ lunulæ areæ AEBD æqualem esse. In medio periferiæ subdupli E punctus instituendus, & ab vtraque circuli extremitate A B lineæ excurrant vsque ad E, ibique mutuo concurrant, quia dupli portio A D B F quarta sui circuli pars valet quantum duæ subdupli portiones A E, E B, etiam sui circuli pars quarta (per 20. primi nostri) ideo

 sub-

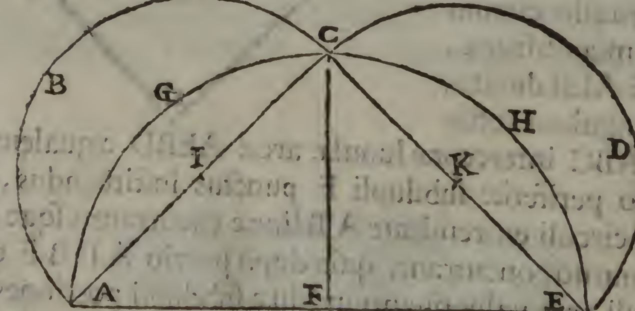
ſubductis portionibus A E, E B appoſita A D B (per primum axioma noſtri ſecundi libri) triangulum ABC valet quantum lunula AEBD, quod erat demonſtrandum.

Hyppocrates hoc aliter probat in primo Phyſicorum Ariſtotelis, quia quadrans dupli ADBC valet quantum ſemicirculus ſubdupli AEB, abſciſſa portione communi A D B, quæ inter vtrumque interiecta eſt, remanet trimetrum A B C æquale lunulæ AEBD, quadrandæ.

Conſectarium.

Ex hoc circumferentia dupli tranſibit ſemper per extremitates diametri ſubdupli, quod in alijs non euenit; quia angulus in ſemicirculo A E B rectus eſt (per 31. 3. Euclid.) quadrata A E, E B æqualia ſunt quadrato A B, & quadrantis dupli angulus ACB etiam rectus eſt, ergo quadrata AC, CB æqualia ſunt quadrato AB, ob id recta linea ſubtenſa quadrantis dupli eadem eſt cum diametro ſubdupli.

Duas lunulas æquales in dupla, & ſubdupla proportione exaratas ſeorſim quadrare. Prop. 2.



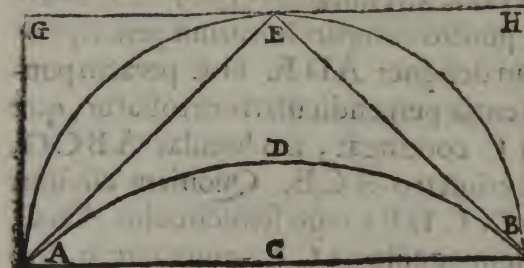
Eodem modo hoc commodiſſime abſoluemus. Eſto circulus

culus dupli A C E, & diametri extremitatibus A E binæ lineæ in medium circuli anfractum excurrant; & vbi mutuo contactu angulum efficiunt, illic C litera exaretur. Subtensæ AC, CE in medio ductu præcidantur, præfixis literis I K, mox assumpto circino ad rem commodè proferendam, pede vno in I infixo subsistente I A interuallo linea circumducatur vsque donec ad alteram extremitatem C perueniat, inuariatoq. circini pede K puncto compari linearum perscriptione circuli semianfractum designet A D E. Hoc peracto puncto F lineæ in plano iacentis perpendicularis extollatur, quæ in cuspide curuaturam C contingat, aio lunulas A B C G, C D E H, æquales esse trimetro A C E. Quoniam circulus A C E duplex est A B C, C D E, ergo semicirculus A B C, C D E æquales sunt semicirculo A C E, amputentur duæ communes portiones A G C, C H E, residua rectilinea triangula A C F, F C E æqualia sunt lunulis ABGC, CDEH vel modo, quo supra præcepimus triangulum dupli A G C F æquale est semicirculo ABC, & triangulum F C H E æquale semicirculo C D E, subductis communibus portionibus AGC, C H E, triangulum A C E, est æquale duobus lunulis A B G C, C D E H.

Consectarium.

ANtequam vltra progrediar consentaneum duxi adnotandum angulum rectum A C E bifariam dissectum in C ex (per 8. 6. Euclid.) E C, ad C A rationem habet vt E F ad F A, & sic triangulum C F E ad triangulum C A F (per primum 6. Euclid.) & quia æqualia sunt, lunulæ quoque æquales sunt.

Vacans ſpacium, quod intra figuras omnes notas interuenerit quadrare.
Prop. 3.



REcta linea AB dirigenda eſt, & ab eius vmbilici medio puncto C ſemiorbis circumducendus eſt A E B, completo ſemiorbi A C B, lunula complenda eſt more AEBD, mox laterales lineæ erigendæ ab extremitatibus AB ſunt, & medio eius puncto E ſuperior linea exaretur ipſi AB æquidiſtant, vt vltro, citroq. ſemicirculum tangant, etiam hiſce lateribus parallelogrammum exprimant AGHB, demum ab extremitatibus AB, medio puncto E tranſuerſas lineas ſortiatur AE, EB. Quoniam parallelogrammum GABH ſemicirculum continet, & eſt ſui quadrati dimidium, ſemicirculus lunulam continet AEBD, & lunula AEBD ſuo triangulo AEB æqualis eſt, & triangulum AEB ſui parallelogrammi dimidium eſt, ergo interceptæ areolæ AGE, EHB, ADB, quæ lunulam AB ambiunt, æquales ſunt ipſi lunulæ areolæ, ergo ſui amplexantis parallelogrammi dimidium ſunt.

Conſectarium.

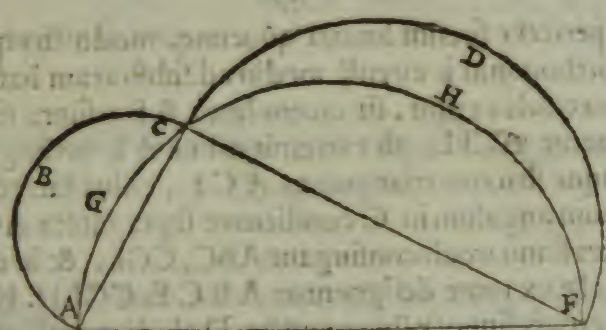
EX hoc perſpicuum eſt lunulam ſui quadrati partem eſſe quartam; nam ſi lunula ſui obſepientis parallelogrammi dimidium eſt, & parallelogrammum ſui quadrati dimi-

dimidium; igitur lunula sui quadrati dimidium erit.

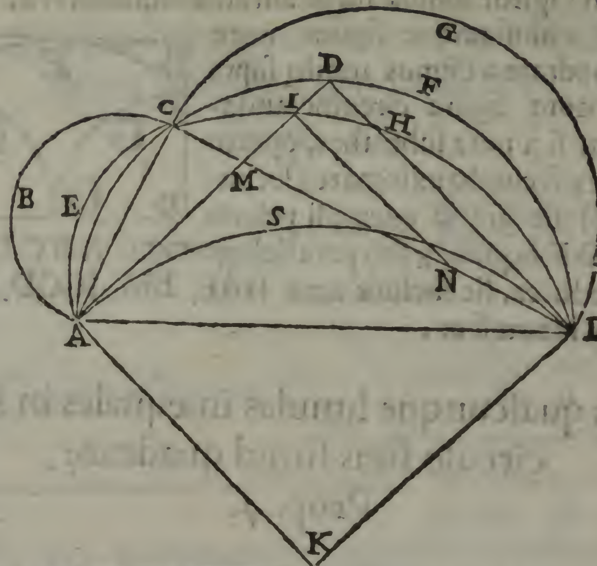
Vel si cuiuscunque figuræ notæ vacua quadrare velimus modo supra cognito nota figura circumclaudatur, quam si à nota subtrahes, optato potieris ex secundo axiomate (secundi nostri) sit gratia exempli pelecis HEIGOF sæpienda suo parallelogrammo ABCD, quam ab ipso seduces, sic inclusæ areæ HAE, EBI, IGOD, OCHF residuum innotescet.

Duas quascunque lunulas inæquales in semicirculo sitas simul quadrare.

Prop. 4.



Triangulum rectilineum insemicirculari linea definiri debet, quod tribus notis distinximus ACE, supra eius latera semicirculi incubabunt ABC, CDE, quibus congruens area adinuenienda est, inquam angulus ACE in semicirculo rectus est, & bini semicirculi ABC, CDE æquales sunt semicirculo AGCHE ex eis, quæ supra habita sunt, reiectis communibus portionibus AGC, CHE relictæ semilunulæ ABCG, CDEH residuo triangulo ACE rectilineo æquiparantur.



At si perfectæ fuerint lunulæ quocunq. modo inæquales, semper orthogonio à circuli medio ad substratam basim deducendo æquales erunt. sit iacens linea A L, supra semicirculus struatur ACFL, ab extremitatibus A L orthogonium quodcunque struatur triangulum A C L, cuius laterum ductum rectum angulum in C constituant supra latera AC,CL, Ambientes semicirculi consurgant ABC, CGL, & in eis perfectæ lunulæ ex more designentur A B C E, CGLH. His peractis in verticis sinuosæ lineæ puncto D ab diametri extremitatibus A L duo latera consurgant, vt orthogonium triangulum ADL constituant, aio dictas perfectas lunulas ABCE, CGLH, in circulo A C D F L descriptum semper dicto triangulo ADL æquales esse: Quoniam lunulæ A B C E, C G L H æquales sunt triangulo orthgonio A D L semper ex secunda huius.

Potest & alia probandi ratio suscipi. Triangulo A D L super lineam AL descripto, aliud triangulum æquale infra lineam AL designetur, & sit ALK, & puncto K circini pede

fixo,

fixo, altero vago in A collocato ſinuoſa linea ducatur vſque ad L. Quoniam duæ lunulæ perfectæ ABCE, CGLH æquales ſunt vni lunulæ ASL (ex prima huius) & lunula ACDFLS eſt æqualis triangulo AKL, quod idem eſt cum triangulo ADL.

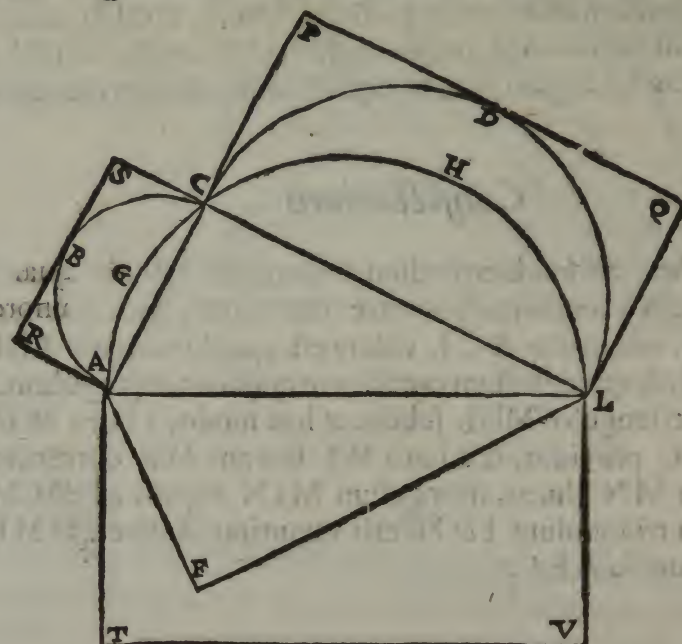
Conſectarium.

EX hoc animaduertendum imperfectæ lunulæ quanto magis à ſemicirculi vertice declinant, tanto minores fieri, vt in triangulo ACL videre eſt, quod triangulo ADL minus eſt, & qui defectum conſpicere quęſierit, triangulum ACM à triangulo MDL ſubducat hoc modo, à linea MD, linea MC præcidat, & à linea ML lineam MA obtruncet, & lineam MN ducat, triangulum MIN æquale erit ACM, reliquum triangulum IDN erit quantitas lunulæ IDML, dempta lunula AEC.

Vacua inter lunulas intermiſſa quadrare. Prop. 5.

AT vero interuenientia vacua circa lunulas ſi quadrare quæſieris, ita quadrabis. Eſto minor lunula ABCG, maior CDLH imperamus ſemicuruilinea triangula inania inter illas, in rectilineas figuras reddere ſcilicet CPD, DQL, CHL, ARB, BSC, AGC, circumſcribantur parallelogrammata tangentia earum ambientes lineas PQCL, ARSC, & fiat alterum parallelogrammum ex binis AL, TV, & ſit ALTV, & fiat triangulum ACL æquale AFL (per 31. primi Euclid.) quibus ita diſpoſitis inquam vacuum circa ATVLF æquale eſſe imperatis vacuis.

cuis. Quoniam triangulum A F L eſt æquale ACL ex

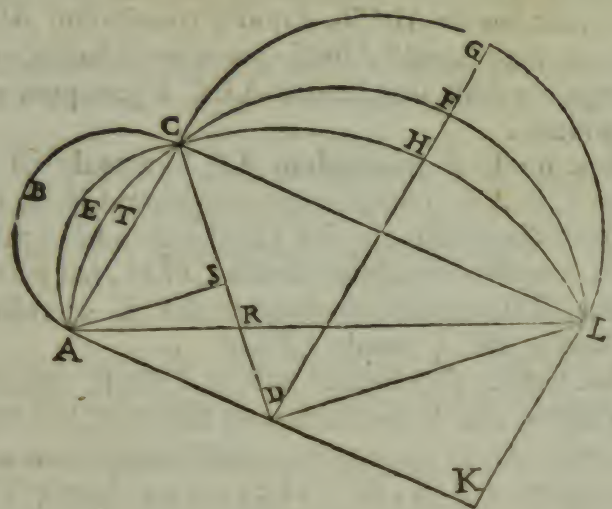


conſtitutione,& triangulum ACL eſt æquale lunulis CDLH, & A B C G, ergo ſi triangulum A F L à parallelogrammo A T L V abſtuleris, reliquum vacuum A T V L F erit æquale interiectis vacuis iam recenſitis.

Duas lunulas inæquales in ſemicirculi ambitu déſcriptas ſeorſum quadrare.

Prop. 6.

ESTO rectangulum triangulum A C L, cuius porrectius latus C L ſit duplum exilioris AC, & circumferantur lunulę ex more,quibus adijce ſuas literas indices C G L F, & A B C T, mox parallelogrammum conſtituatur ex lateribus

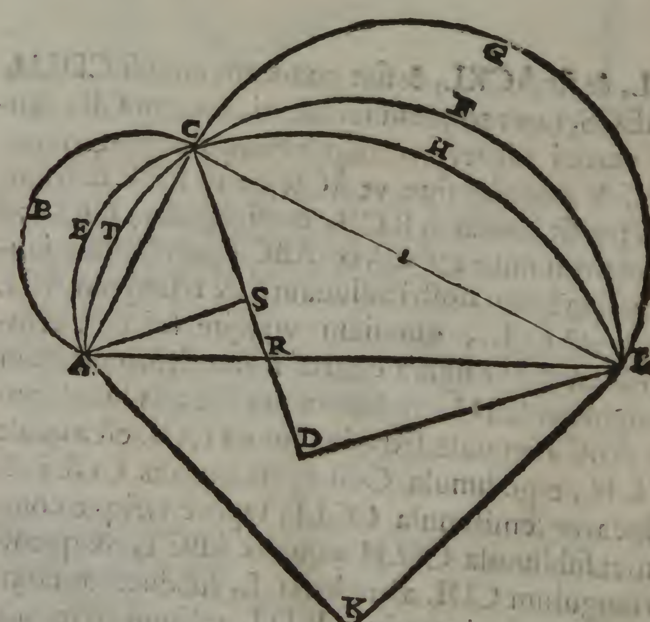


ribus AC, CL, & ſit ACKL, & fiat quadrans circuli CDLH, & ſubdupli AECS, nos rationem reddituri, lineam CR triangulum ACL partiri taliter, vt anguli compares mutuo correſpondentes, & æquales ſint, vt ACR par ſit RDL & triangulum A C R par ſit lunulæ A B C T, & triangulum CRL ipſi CGLF. Quoniam lunulæ CGLF, & ABCT pares ſunt triangulo ACL quarta huius noſtri adiuuante, & triangulo ACL par trimetrum C D L, quoniam vtrique ſui parallelogrammi dimidium eſt (vt figura quarta huius demonſtratum eſt) ergo triangulum C D L eſt duabus præſignatis iam lunulis CGLF,& ABCT æquale,ſed triangulum CDL eſt æquale lunulæ C G L H, ergo lunula CGLH eſt æqualis CGLF, & ABCT ſubducatur ſemilunula CGLF, vtpotè vtrique communis, remanet ſublunula CFLH æqualis ABCT, & quemadmodum triangulum CDL æquale ACL, ſubducatur commune C R L, reliquum triangulum R D L reliquo triangulo ACR æquale,lunularũ partium repręſentantia,ſequitur trian-

gulum RDL esse æquale sublunulæ C F L H, & triangulum ACR æquale lunulæ ABCT, à quo si triangulum ACS subtrahatur, æquale lunulæ ABCE (per primam huius) remanet subtriangulum ASR imæ lunulæ A E C T par, quod erat demonstrandum.

Vel hoc modo si triangulum A C L æquale est lunulis A B C T, C G L F, compleatur triangulum C R L, & compleatur perfecta lunula, quę sit CGLH, ergo addita pars trianguli RDL æqualis erit additæ lunulæ CFLH, sed pars trianguli addita RDL æqualis est triangulo A C R, vt vidimus, & par est lunula ABCT lunulæ CFLH.

Vel hoc modo. Tres lunulæ ABCE, CGLF, AECT sunt æquales trigono ACL, & duæ lunulæ CGLF, CFLH trigono C D L, ergo omnes quatuor iam dictæ lunulæ sunt æquales duobus trigonis A C R, & C D L, sed tres lunulę A B C E,

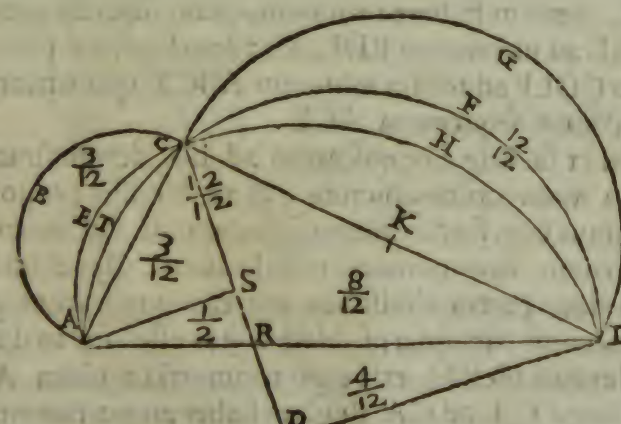


CGLF, LFCH sunt æquales trigono ALK, ergo reliqua lunu-

lunula A E C T est æqualis trigono A S R, quod quęrebamus.

Vel tres lunulę A B C E, AECT, CGFL æquales sunt trigono ACL, & trigonum CDL æquale lunulę CGLH, tolle triangulum CDL ęquale iam dictę lunulę CGLH, reliquum triangulum ACR lunulis ABCE, AECT æquale est, tolle lunulam perfectam A B C E sub lunula A E C T sub triangulo A S R æqualis erit, quod erat demonstrandum.

Trianguli in circulo descripti angulo per medium disciſſo, & lunulis à circulo medio diuisis, proportio partis maioris trianguli ad minorem, est sicut superior pars maioris lunulæ ad inferiorem, & superior eadem pars ad minorem lunulam, & superior pars trianguli ad inferiorem sequitur eam suarum lunularum. Prop. 7.

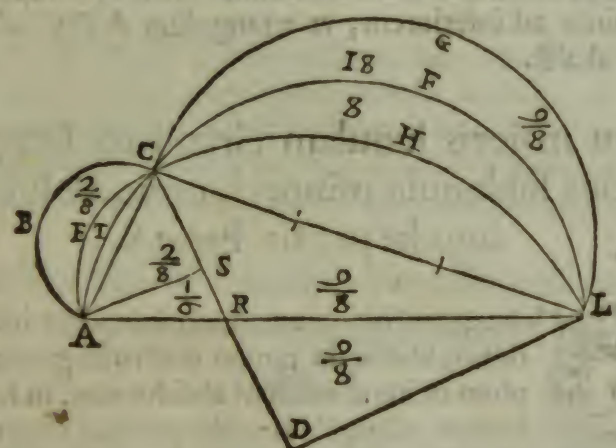


Priusquam ad diuersarum partium rationem lunularum

descendamus, admonitione dignum censemus, quod cum ab æqualitate duarum lunularum descendimus, quam (in secunda parte) vidimus, quantum maior crescit, tantum altera decrescit, & ex alterius defectione altera augumentũ suscipit, & circulus ille, qui per medium vtriusque percurrit, à maiori semicirculo subripit, & minori addit, sed id non temerè, sed certo se superant excessu, vt ratio maioris superioris lunulę ad inferiorem eadem sit, quam maioris superioris trianguli pars ad inferiorem, & ratio maioris superioris lunulę ad totam minorem, vt ratio partis trianguli anterioris ad posteriorem eandem sequuntur analogiam, & vtraque vtriusq; rationem sequitur, vt exemplis patebit. Triangulum rectangulum strue, cuius angulis appinges literas ACL, productius latus CL in duas partes, angustius in vnam partiri. In puncto bifariæ scissionis lateris CL signa K, ex quo, & interuallo CK circinationis arcus exaretur, cui suas indices literas applicabis CGL, eodemq. ordine signa AC suum arcum delinea ABC, mox triangulum maioris circuli CGL constitues, & sit CDL, & minoris ABCE, sit ACS supra succumbentem omnium basim AL, medius circulus flectatur ACFL, dico lunulam superiorem maioris circuli CGLF ad suam inferiorem CFLH, eandem habere rationem, quam superior pars trianguli CRL ad inferiorem RDL, & eadem superior pars lunulę maioris CGLF ad totam minorem ABCT, quam triangulum CRL ad suum sequentem ACR.

Quod vt facilius cognoscamus ad hoc demonstrandum adhibeo numerorum officium, & vt facilius proportiones obseruemus cum fractis integros numeros in fractiones soluamus, vt vnum denominatorem habeamus. Quoniam lineam CL in duas partes diuisimus erit eius quadratum quatuor partium, cuius pars quarta, idest vnitas est, hanc in duodecimas soluemus, idest $\frac{12}{12}$, erit ergo totum triangulum ACL $\frac{12}{12}$, & quia linea CL ad CA, duplam habet proportionem, ita RL ad RA, & sic triangulum CRL ad triangulum CAR, ergo trian-

triangulum CRL erit $\frac{8}{12}$, & triangulum ACR $\frac{4}{12}$. Ergo tota lunula perfecta CGLH $\frac{12}{12}$ erit ſuperior lunula maioris circuli CGLF cum duabus lunulis ABCT ſimul iunctæ ſunt $\frac{12}{12}$. Triãgulum CDL erat $\frac{12}{12}$, ſi ſuperior pars erat $\frac{8}{12}$ inferior RDL erit $\frac{4}{12}$, & quia tota perfecta lunula CGLH eſt $\frac{12}{12}$, vt proportio quadrupli ſeruetur, quam habet ad minorem perfectam ABCE $\frac{3}{12}$, & triangulum ACS erit ei par $\frac{3}{12}$, inferior ergo pars $\frac{1}{12}$, & cum nullus melior congruat ſublunularum partibus ſit ſublunula AECT $\frac{1}{12}$, ſic ſuperior pars maioris lunulæ $\frac{8}{12}$ inferior $\frac{4}{12}$. Vnde proportio trianguli ſuperioris CRL ad inferiorem BDL erit dupla, vt ſuperior maioris lunulæ pars CGLH ad inferiorem etiam dupla, ideſt $\frac{8}{12}$ ad $\frac{4}{12}$, & proportio ſuperioris lunulæ pars CGLF ad lunulas ABCT etiam dupla eſt, ſed ſuperior minor lunula ad inferiorem tripla eſt, vt $\frac{3}{12}$ ad $\frac{1}{12}$, ſic triàngulum ſuperius ACS ad ASR, vt $\frac{3}{12}$ ad $\frac{1}{12}$.



Subijciatur aliud exemplum in tripla diuiſione ſupra lineam porrectam AL, circulum effingamus ACFL, mox in eo triangulum deſcribendum, vt rectus angulus C literam poſſideat, cuius latus vnum longius CL tres partes, minus AC, vnam ſortiatur in ſtruendis ibi commodè ſemicirculis CGL

maior,

maior, ABC minor. Inde perfectæ lunulæ ex ordine ſubſignentur, ideſt trianguli CDL, CGLH, trianguli ACS, ABCE.

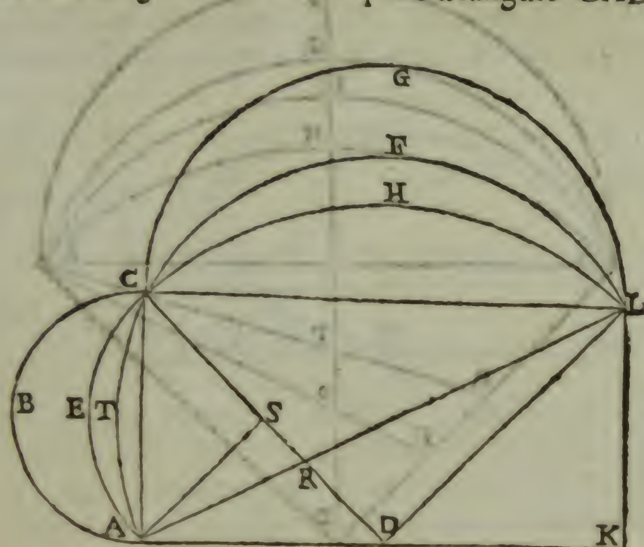
Triangulum ACL, quia linea eſt trium partium, area erit $\frac{12}{8}$, proportio CRL ad ACR eſt tripla, ob id triangulum CRL erit $\frac{9}{8}$, & triangulum ACR $\frac{3}{8}$, triangulum CDE latus trium eſt partium, quadrans eſt nouem partium, cuius quarta pars eſt $2\frac{1}{4}$, ideſt $\frac{18}{8}$ ſupra ſunt trianguli CRL $\frac{9}{8}$, ergo triangulum RDL erit $\frac{9}{8}$, tres lunulæ ABCE, AECT, CGLF eſt $\frac{12}{8}$ ſuperior maior ad duas minores eſt tripla, ergo lunula ſuperior eſt $\frac{9}{8}$, & duæ lunulæ ABCE, AECT eſt $\frac{3}{8}$, ſed lunula perfecta eſt $\frac{2}{8}$, ergo ſuperius triangulum CAS $\frac{2}{8}$ ſubditum reliqui erit $\frac{1}{8}$ & ſublunula reliqua $\frac{1}{8}$ inferior maior lunula, vt compleat numerum $\frac{18}{8}$ erit $\frac{9}{8}$, ergo proportio lunula ſuperior ad inferiorem, ideſt CGLF ad CFLH ſicut triangulum CRL ad RLD, & lunula EGLF ad lunulas ABCT, & ſuperior lunula minor ad inferiorem; vt triangulum ACS ad triangulum ASR.

Datam maioris lunulam circuli ita ſecare, vt eius ſublunula minori lunulæ, & ſublunulæ par ſit. Prop. 8.

Qvamquam in ſupra commonitis idem indicauerimus, vberioris tamen doctrinæ gratia exemplum in hunc modum abſoluemus. in hanc rationem triangulum orthogonium eligendum eſt ACL, cuius porrectius latus CL bifariam diſpeſcemus, ſupra lunulas ex more conſtituemus, & medium circulum ATCFL, & eis triangula ſubijciemus CDL, ACR, mox datis lineis AC, CL parallelogrammum conſtituatur CALK, inquam ſublunulam CFLH, lunulis ABCT æqualem eſſe. Quoniam lunula CGLH æqualis eſt ſuo triangu-

lo

lo CDL, & triangulum C D L æquale triangulo CAL, quia



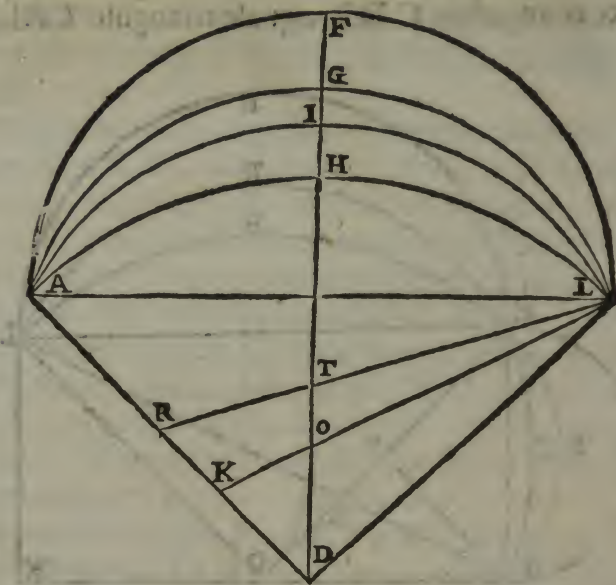
vtrumque eſt æquale ſuo parallelogrammo dimidio CALK, & triangulum A C L eſt æquale lunulæ CGLF, & lunulis ABCT, ergo lunula C F L H eſt æqualis lunulis A B C E, & A E C T, tollatur de medio lunula CGLF, remanebit ſublunula CFLH æqualis ABCT, quod erat diſcutiendum.

Datam dupli, & ſubdupli circuli lunulam ad imperatas partes diſcindere.

Prop. 9.

ESto dupli, & ſubdupli multifariam ſcindenda lunula A F L H, cuius ſubtenſa A L, ſui compar triangulum inferius ſubſtituemus ADL à medio inflexi circuli vertice F vſq; ad trianguli aciem infernè poſitam D recto ductu deſcendat. In dextro trianguli latere AD futuræ lineæ deſignandæ ſunt lu-

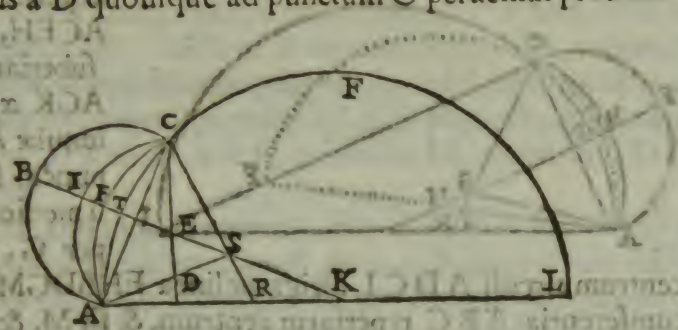
nulam



nulam diuiſuræ in quotcunque partes volueris decem, vel ſeptemdecim, pro nunc bifariam in R diſpeſcito, & tranſuerſam ad L deducito, ſi velis lunulæ mediam partem auferre, & vbi ſe lineæ cum diametri linea decuſſabunt, fige circini pedem fixum, & vagum alterum ad alterutrius diametri extremitatem A, vel L, arcum circumflecte A G L, nam lunula AFLG erit dimidium lunulæ. Vel ſi tertiam partem vis auferre, ſit latera K in laterali tractu tertia pars ab K ad L lineam porrigito, & vbi FD lineam ſecat, pede circini ſtabili collocato, ac vago altero ad A extremum, arcum circumduces A I L, & tertiam lunulæ partem A I LH à duobus abſcindet. Quoniam triangulum ADL per RL lineam bifariam diſſectum eſt, ſuperior trianguli pars ARL per ſuperexaratam propoſitionem ſuperiori lunulæ parti AFLG congruit, & ima trianguli pars RDL imæ lunulæ parti correſpondet, & vtræq. partes ſunt, ergo & lunulæ eis pares diſſectæ ſunt: Idem de tertia parte dicendum.

Eadem

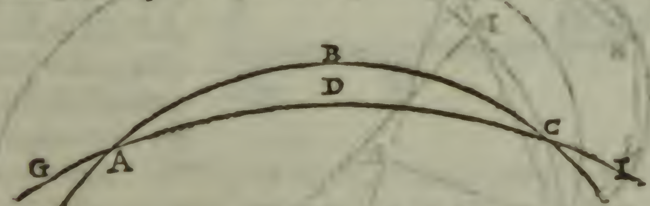
Eadem in parua lunula operaberis, nam si bifariam ABÇ lunulam vis partiri trianguli eius ABS latus, AS bifariam in D, & latus à D quousque ad punctum C perueniat protrahe-



mus, & lineam à B medio semicirculi, punctoq. S, vsque ad circuli ATCFL centrum perueniat, & vbi se interseçabunt puncto E siste circini pedem, & Interuallo EA, extende circulũ AIC, & diuisa erit lunula: probatio ex anteriori liquet.

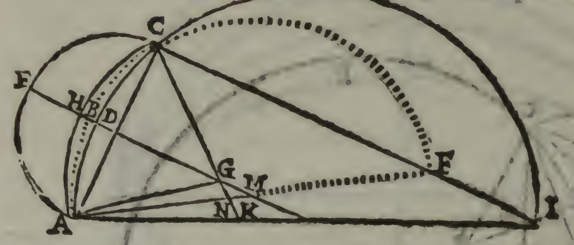
Datam quamcumque lunulam quadrare. Prop. 10.

Esto exposita quadranda lunula A B C D cuiuscunque ordinis, cui æquale oportet reperiri rectilineũ, maior cir-



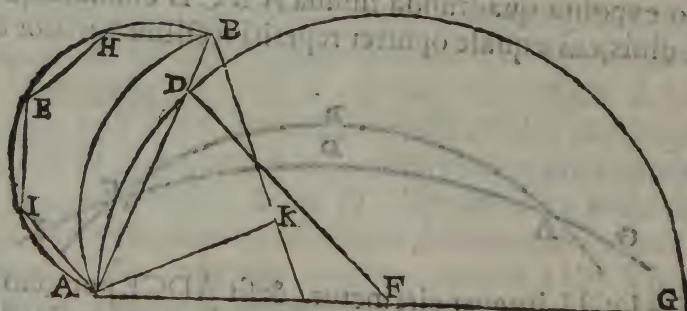
culus GADCH, integer circinetur, & sit ADCI porrecto suo diametro AI, & à puncto A superponatur præfata lunula ABC, & compleatur circulus A B C F cum suo diametro AF, extendaturq. linea à puncto A ad C, & sit AC, discindaturq. rectus angulus ACI per rectam CK, & super basim AC circinetur semicirculus AEC, & puncto G, basi AC, fiat quadrans

dupli, & sit AHCG, & trahatur A G, G C. Quoniam triangulum A G C est æquale lunulæ ACEH, remanet subtriangulum AGK æquale sub lunulæ AHCD. à puncto semicirculi medio E, AEC per G, vsque ad



centrum circuli A D C I, dirigatur linea EHBDGML ex circumferentia A B C reperiatur centrum, & sit M, & trahatur A M, vsque ad F diametri finem ex supradictis, si à triangulo AGK, quod lunulam AHCD refert, subducatur AGM, quod repręsentat lunulam A H C B, remanet subtriangulum ANK repręsentans sublunulam ABCD, quod erat edocendum.

Semilunulas ex nota ratione quadrare.
Prop. IV.



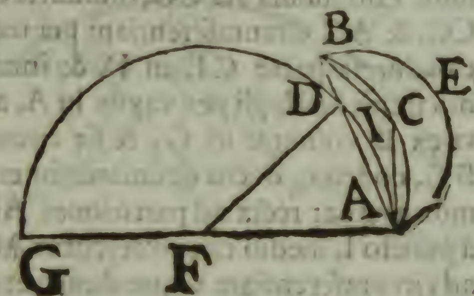
IN sola proportione dupli, & subdupli accidit, vt semidiameter circuli subdupli sit æqualis subtensæ quadrantis dupli, vt in prima Prop. huius vidimus: ideo in his perfectæ lunulæ, & alijs potius circuli semilunulæ dici possunt.

Esto

Esto circulus ADG quadrans semicirculi AEB, & quarta pars semicirculi ADG sit ADF, & diameter subdupli ADB transeat per punctum D, dico triquetrum ADF semicirculo AEDB æquale esse. Tollatur communis portio DA, remanet lunula AEBD, æqualis triangulo FDA, sed AEBL perfecta lunula nota est: ergo sublunula ALBD nota erit, subducito triangulum DBK ab AKF, residuum sublunulæ ALDB notum erit.

Potest & alio modo cognosci. Portio quadrupli AD valet quatuor portiones subquadrupli, secetur circumferentia AEB quadrifariam, & sint portiones AI, IE, EH, HB, amputentur portiones AI, IE, EH, HB, reponatur AB, trapezium rectilineum AIEHBD notum erit, & sic de cæteris.

Alio modo.

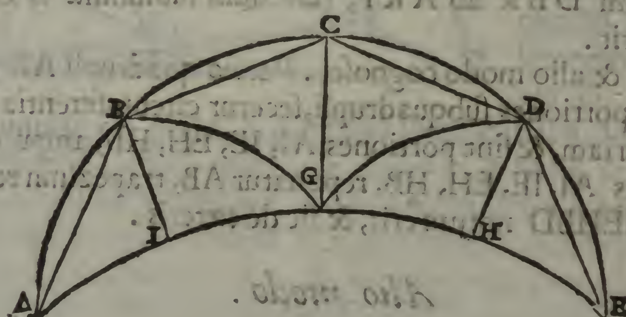


Sit semicirculus ADG, quadruplus ipsius AEB, & ipsius AEB, capiatur duplus, & sit circumferentia ACB, remaneat infra sublunula ACBDIA, quam volumus quadrare. Quia semilunula ACBDIA, nota est, & nota etiam lunula AEBC, ex vigesima sexta primi nostri, si notum à noto subtrahatur, quod reliquum est notum erit.

Possumus etiam proximè prædicto modo quadrare, quia portio AD, est dupla ipsius ACB, diuidatur ACB, in duas partes AC, CB, demantur hæ duæ portiones AC, CB, reponatur AD, rectilineum ACBDA, est æqualæ sublunulæ ACBDIA.

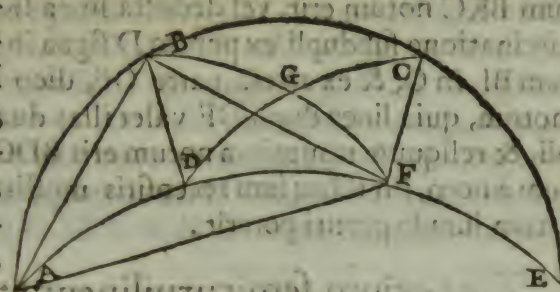
Lunulam per latum in quadrabiles partes diuidere. Prop. 12.

NNunc me conuertam ad quadrandas lunularum in latum partes, cum paulò ante per longum indicauerimus.

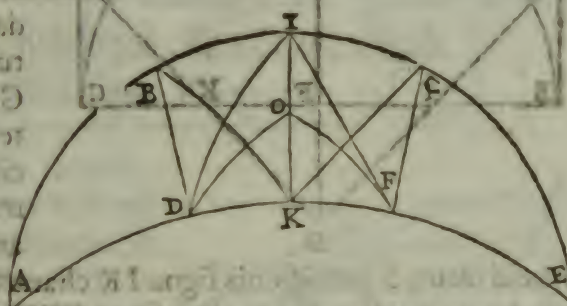


mus. Esto lunula AECG, diuidaturq. per medium per lineam CG, & AC circumferentiam per medium proscindes in B, & ex aduersa parte CE in D, & inuariata circini apertura semicirculi subdupli pes vagus in A, alter fixus sistatur taliter, vt ex B voluatur in G, & fit circumferentiæ circumductio BG, eodemq. ductu definiatur intercapedo GD similis BG, mox proruat recta ad partitiones AB, BC, CD, AG, GE, & à puncto I, medio circumferentiæ AG, erige lineam sursum, ad circumferentiam vsque donec eam in B tetigerit. Quoniam AB est æqualis BC, & portio AG dupli rependit duas AB, BG semidupli, dico illis AB, BG sublatis, hac AG reposita, rectilineum triangulum ABG notum erit, idem intelligendum de altera partitione GDE, reliquum triangulum BCDG notum erit, vt residuum notæ lunulæ. Vel amputatis portionibus BC, CD, repositis his BG, GD æquales, & eiusdem circumferentiæ, recensitum triangulum notum erit. Ex his triangula ABG, BCDG, GDE per medium transuersis diuisa lineis nota erunt, & tripartita erit lunula.

Vel



Vel circuli dupli tripartita partitione curuaturá constituas A D, DF, FE; Item subdupli AB, BC, CE; inuariataq. circini apertura intra duo puncta BF, DC mutuo inter se intercidentes arcus flectantur BF, DC, & vbi futurus est cōtactus illic pone G, aio triangulum ABF notum esse, quia AF, dupli circumferentia, duobus illis subdupli AB, BF respondet; vnde reiectis illis, hac reposita portione pensatur. Idem de alia parte DCE dicendum, & triangula BGD, CGF, BGC, DGF nota sunt, sic etiam triangulum BCF, & FCE dicendum.

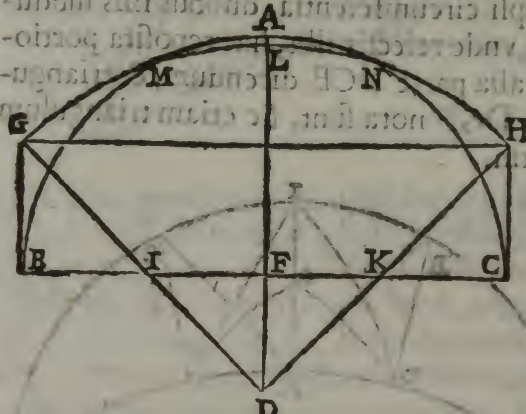


Remanente adhuc lunulæ illæsa tripartitione ex puncto D fixo circini pede altero ad F signa in subduplo æqualē portionē in I, mox inuariata circini apertura, qua duplū circulū constituisti, siste circini pedem in altera extremitate lunulæ puta E, alterum ad D, & I conuertè, & signa circumferentiam dupli DI, & ab I ad F excurrat recta I F, dico triangulum DIF notum, quia circumferentia dupli DF est æqualis DI ex constitutione, ratione iam sæpius repetita, addendo, & demendo notum erit triangulum DIF, vel intercapedine BK circinetur BK circumferentia dupli, & recta ducatur K C, quia DF est compar BC, & DF æqualis ipsi BK, tolle portionem BC, repone BK triangulum

lum

lum BKC notum erit, vel deducta linea IK, & interuallo B I circinatione subdupli ex puncto D signa in linea IK interuallum BI, in O, & ex altera parte OF, dico triangulum DOB notum, quia linea dupli DF valet illas duas DO, OF subdupli, & reliquum trapezium notum erit BDOFC demendo notum à noto, similibus iam recensitis modis multipliciter perlatum lunula partiri poterit.

Trapezium semicuruilineum trapezio par extruere. Prop. 13.



Esto dupli quadrans DGLH, & hinc inde à terminis G H transuersa linea ducenda est, quæ curuaturam spectet, & sit G H, mox duo latera, quæ anguli faciem in D confirmant DG, DH, amussim in medio præcidantur, & præcisionis signa I K characteribus insigniantur, & proruat linea per eadem signa BIKC ipsi GH parallela, & ex punctis G H ad perpendiculum demittantur supra BC lineæ GB, GH, & excurrentes in longum lineam BIKC bifariam diuidat, cuius diuisionis terminus F, & centro F interuallo FB, circumducatur semicirculi forma subdupli BAC, quæ quadrantis circumferentiam in duobus punctis intercidet. Intercisionis puncta totidem literas sortiantur M, N, & vniatur FD. Dico Trapezium semicuruilineum BGMLNHC par esse quadranti DGLH, sed ad demonstrationem accingamur. Quoniam FD æquidistat HC, cadit inter

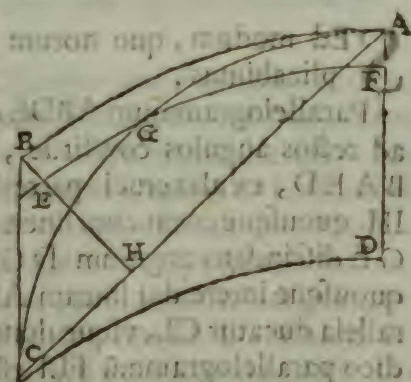
inter eas DH, ergo anguli FDK, KBC æquales anguli ad K contrapoſiti etiam pares. Itidem & recti ad FC, & HK linea ipſi KD etiam æqualis. Triangulum ergo FDK triangulo KHC compar. Idem ex contraria parte ſentiendum, cum compari linearum deſcriptione confirmata ſit. Demantur ergo triangula IFD, FDK reponantur GBI, KHC, trapezium ſemicuruilineum BGMLNHC æquipollet ſemicirculo BMANC.

Conſectarium.

EX his apparet lunulam MANL æqualem eſſe duobus triangulis MGB, NHC, quoniam circuli pars extramittitur MANL, includantur trapezij partes NHC, MGH.

Triangulum ſemicuruilieum ex quarta ſemicirculi ſubdupli, & octaua dupli quadrare. Prop. 14.

SIt ſemiabſciſſa lunula AGCD, & linea CB ipſi AD parallela conſtituatur, & dupli circumferentia AB extremitate A ipſi CD parallela ducatur, donec ductum lineæ CB contingat in B, dico ſemicuruilineum triangulum ABCG quadrari poſſe. Quoniam AB ipſi CD Parallela, & eiuſdem circumferētiæ, ergo quadrangulum BACD notum eſt,



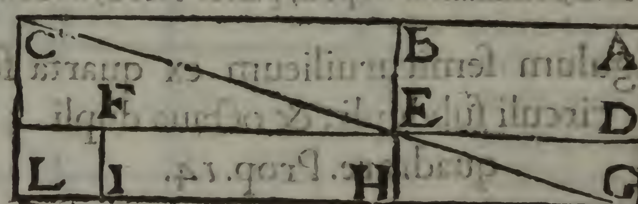
à quo ſi ſemilunula ſubducatur CGAD, remanet triangulum notum ABCG.

Vel

Vel quia lunula æqualis est AGF ipsi ECG ex præcedenti; parallelogrammum EBAF est notum, quia ex æqualibus circumferentijs; ergo & triangulum CBA notum est, quia vtrique additur commune GAF.

Vel triangulum semicuruilineum, quod paulò antè descripsimus ABCE remaneat, & ducatur linea CA portio semidupli CGA, & sit ABH semiportio dupli, ergo æquales, abscessus communis EHGA tollatur, remanet BEA æquale CEH, addatur vtrique communis BEC, ergo triangulum rectilineum BHC est æquale triangulo semicuruilineo BCGA.

Notum à noto subtrahere. Prop. 15.

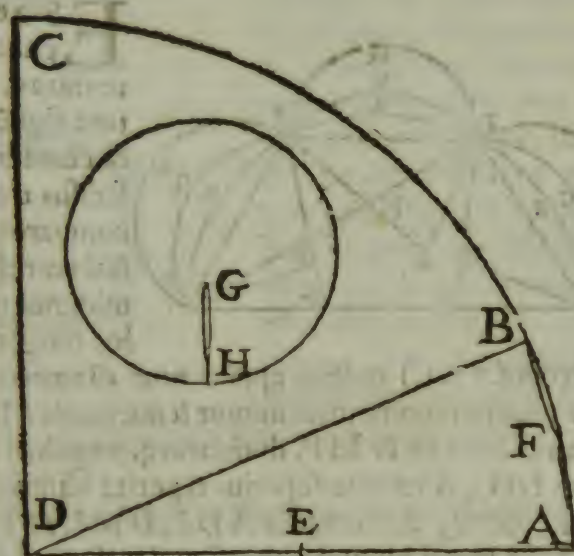


SEd modum, quo notum à noto subtrahatur nunc explicabimus.

Parallelogrammum ABDE circa decussatas lineas BH, EF ad rectos angulos constitue, & sit quantitas lunulæ datæ BAED, ex alia crucis parte HIEF, elongeturq. parallela IH, quousque coeat cum linea AD in puncto G, mox linea GE discindens angulum DGH, ducatur per coniunctum E, quousque intercidat lineam AB, & ibi appone C, & ab C, parallela ducatur CL, vsque donec lineam GHI tetigerit in L, dico parallelogrammũ FLI esse quantitatem trianguli BAC, qua superatur à parallelogrammo FH; quoniam parallelogrammum BD est æquale parallelogrammo EL; dempto parallelogrammo FH, residuum erit FL, quod quærimus.

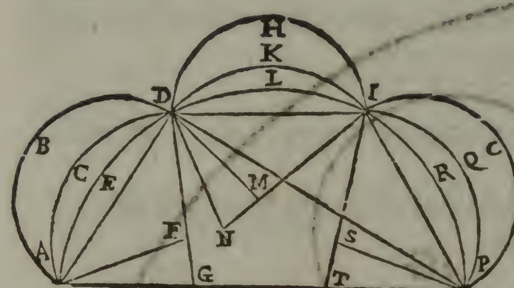
Circu-

Circulum quadrato proximum conſtituere. *Prop. 16.*



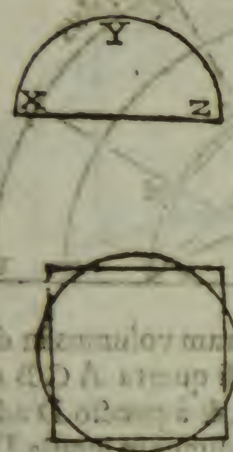
ABſoluta lunularum tractatione venio tandem ad circuli quadrationem ex ingenij facultate, ſed initio circuli quadrationi approximabimur. Eſto ſexto decupli circuli quadrans A B C, & ex ſemidiametri dimidio D E, ſub ſexto decuplus circulus conſtituatur GH, amputetur pars quadrantis ADC, ſitq. DBA, dico triangulum DBA circulo mutua parilitate conſtare ſecetur arcus quadrantis BA bifariam in F, connectanturq. rectè BF, FA, & à circulo G H itidem duæ illæ portiones quadrantis BF, FA, dico triangula FDB, ADF eſſe æqualia circulo, demptis duobus portionibus GH, æquales illis BF, FA intercluſis : quod patet ex conſtructione.

Datum circulum quadrare. Prop. 17.



ESto expoſitus circulus A D I P, inuariataq. circini apertura ſignetur in circuli circumferentia tres abſceſſus tres. n. recipiet compares, & coæquales ſibi correſpondentes ſemidiametro ſemicirculos (cogête ad id Euclidis Propoſ. 15.4.) quibus applicentur diametri AD, DI, IP, ſupra quorum centra incuruentur ſemicirculi ABD, DHI, IOP, excurrat linea ex D ad P, diuidaturq. angulus A D P per lineam DFG, & ex arte ſuperius repetita fiant lunulæ ABDC, DHIK, IOPQ, & triangula A D F, D M I, I S P cum ſuis ſub triangulis ſuis ſublunulis correſpondentibus A F G, D N M, P S T.

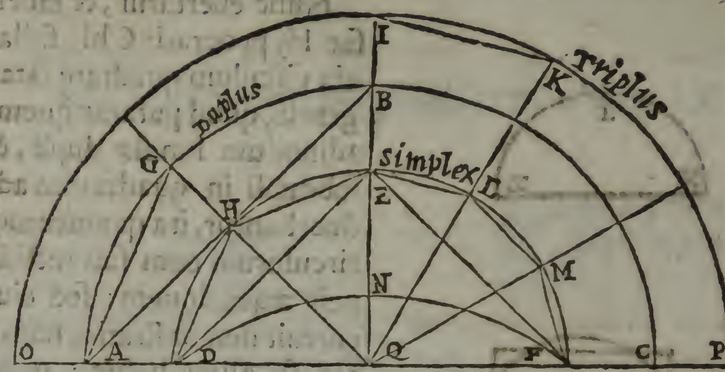
Quoniam ſemicirculus A L P conſtat quatuor ſemicirculis æqualibus ſemidiametro, ſi tollantur tres portiones communes A E D, D L I, I R P, & tria triangula æqualia lunulis AFD, DMI, ISP, tollanturq. tres ſublunulæ tribus ſubtriangulis reſpondentes ACDE, DKIL, IQPR, cum ſuis ſubtriangulis reſpondentibus illis AFG, NDM, SPT, vacuum reliquum intercedens rectilineum, vel trapezium G D N M I S T valet quantum ſemicirculus quartus relictus X Y Z, hoc inane valet ſemicirculus X Y Z. Abſoluamus igitur circulum cum ſuo quadrato valente trapezium illud, & quadratus erit circulus.



Nunc euertatur, & faceſſat Hyppocratis Chij fallacia circulum quadrare satagentis, quod putarat quemadmodum lunulæ dupli, & ſubdupli in quadratum adducebantur, ita quamcumq. circulorum cum ſuis rectilineis æquationem; ſed eius corruit demonſtratio, nam res ſe aliter habet: quod enim eſt ſingulare in circulis ſe in dupla proportione excreſcentibus, diſſentaneum eſt idem in reliquis exiſtimare. Nos (ni fallimur) ex inuentione trianguli A F G ſublunulæ aereæ A D C E reſpondentis, aſſecuti ſumus.

Data portione nota, alteram cuiuſq. proportionis ſibi comparem peruestigare. Prop. 18.

Esto linea O P futura baſis variorum circulorum, & ſemicirculus O I P triplus, A B C duplus, & D E F ſimplex, ſiue ſubduplus, & ſic de alijs alter ſupra alterum in quæſita ratione ſemper excreſcens, & à puncto Q, quod medium diametri poſſidet angulis vtrinque æqualibus aſcendat linea Q I ſemicirculus bifaria diuiſione diſcendens: mox ex centro Q circumferentiam AB æqualiter partiens vſque ad G, tranſmittatur, ex altera parte duæ aliæ circumferentiā I P, trifariam ſecantes coæquentur, & ſint Q K, Q M, & ſit

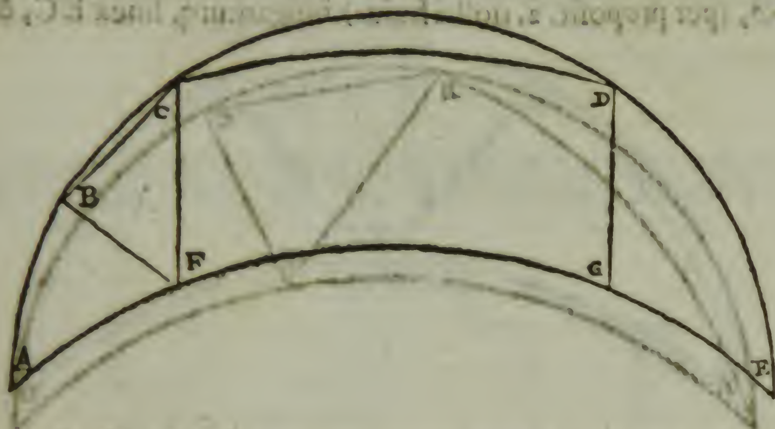


data ſimplicis circuli portio DE, alteram volumus in dupla proportione æqualem inuenire. Dupli quarta A G B diſcindatur bifariam, trahaturq. linea AG, & à puncto D ad E dupli portio ſubpingatur. Quoniam vidimus in lunula DEFN, portionem dupli quartæ circuli DNF valere duas quartas circuli ſubdupli, vel ſimplicis D H E, E L F, ſed portio dupli D N F eſt æqualis A G B, quia eadem eſt dupli quarta. Ergo area concluſa in portipne dupli DNF valet duas quartas ſubdupli DHE, ELF, & portio octaua dupli AG valet duas octauas ſubdupli D H, H E. Idem dicendum de tripla, nam circulus O I K P eſt triplus ſubtripli, vel ſimplicis circuli DHELF, & par ſexta ſemicirculi tripli I K, valet tres ſextas ſubtripli circuli EL, LM, MF, & ſic de alijs cuiuſcunque quantitatis, & incognitæ menſuræ dicendum: nam ſemper rata, & iuſta proportio erit.

Ex portionibus circulum quadrare. Prop. 19.

EX ea, quam modo expoſuimus propoſitione dependet hæc portionum quadratio, quam ob oculos exponemus.

Eſto propoſita lunula A B C D E, ex qua (docente id 15. propoſ. noſtri ante præteritam) minor lunula abſcindatur, quæ



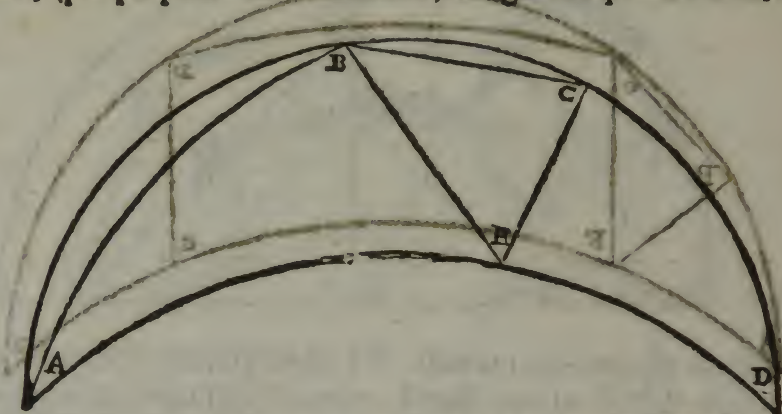
quæ ſit CD, ab cuius extremitatum terminis infernè deſcendant perpendiculares CF, DG. Quoniam quadrangulum ſemicuruilineum C F D G notum eſt ex eiſdem æqualibus circumferentijs dupli CD, GF, nota quoque eſt minor lunula CD, ſi à lunula ACDE ſubducatur quadrangulum notum CDGF, & lunula CD reſidua cornicula ACF, DCE notæ erunt. Mox lineæ dupli AF ſubdupli compar AB reperiatur (per propoſitionem proximè præteritam) & erit trilaterum BFC, quod ſubtrahes à corniculo ABCF, & erit triangulum B C F notum. Duc lineam BC, & trilaterum rectilineum B C F notum ſubtrahe à ſemicuruilineo B C D noto, & area intra portionem BC concepta nota reſultabit.

Altera.

Aliam figuram extruendam non putamus, ſed ſuperiore lunula relicta. Eſto à puncto A vſque ad B duo puncta, dupli circumferentia flectatur, & ſit lunula minor AB, & æqualis AB, fiat linea AE dupli, & à puncto B ad E rectus

tra-

trames ducatur. mox lineæ ED compar ſubdupli reperiatur CD, (per propoſit. 2. noſtri huius) iunganturq. lineæ E C, &

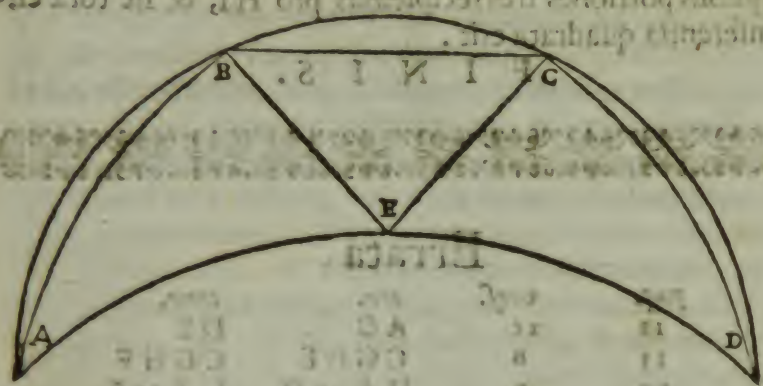


B C, recta lineam etiam connectatur. Quoniam A B, A E æquales, & eædem circumferentiæ ſunt, ſi lineæ ſubtendantur arcubus A B, A E amputata portione A B, repoſita ſuo loco A E notum erit triangulum ſemicuruilineum ABE, lunula AB nota eſt (ex propoſ. 15. preſentis noſtri) ergo lunulæ pars A B E nota erit, deme A B integram, innoteſcet reſiduum BCDE lineæ ED comparem reddidimus CD. Ergo corniculus ECD notus erit, deme à toto reſiduo BCDE innoteſcet trimetrum ſemicuruilineum BEC, appinge lineam BC à terminis BC, & triangulum rectilineum B C E notum erit, ſubducito à curuilineo, & portio BC nota erit.

Altera.

VEl in lunula ABCDE à puncto A vſque ad E, nota in ſubduplo, & ſit AB, & ex altera parte CD, & à puncto A, vſque ad B appinge lineam dupli AB, & ex altera parte CD, mox connectè lineas rectas B E, E C, B C, quia A B, A E æquales ſunt, ſic C D, D E, ergo lunulæ A B, C D etiam notæ, tolle, quia remanet par medij BEC nota, à noto

to fenficuruilineo BGE, tolle rectilineum BCE, remanet no-



ta portio BC, fic & aliæ diuifiones imaginari poffunt, & portiones quadrari.

Data vna portione nota, totam circumferentiam circuli quadrare.

Prop. 20.

SIt propofitus circulus ABCDEFGH, & fit portio nota AB, nos hanc circumferentiam metiemur fepties AB, BC, CD, DE, EF, FG, GH, fupererit HA, qua metiemur bis AB ideft AI, IK, & fupererit K B, quæ portionem IK ter menfurabit. Ergo AB fepties partiemur, quibus abfciffionibus fuas partes addemmus. A portione igitur AB fubducemus octogonum

num rectilineum, reliquum in septem portiones diuidemus, ex quibus portiones tres recipiemus pro HI, & sic tota circumferentia quadrata erit.

F I N I S.

Errata.

pag.	*vers.*	*err.*	*corr.*
11	21	AC	DE
13	8	CGHE	CGHF
20	9	D, & ex D	L, & ex L
23	1	vtrunque	vtrunque
23	18	AFG	AFC
23	21	FG	FB
30	1	AD	AB
32	5	hic	hic
48	15	Prop 8.	Prop 7.
49	17	repesitisq.	repositisq.
58	7	MNE	MNP
64	20	trapesium	trapezium
65	8	duplis	dupli is
68	15	æquidistant	æquidistans
69	1	dimidium	quarta pars.
70	12	descriptum	descriptas.
71	15	dempla	dempta
87	13	Semicuruilieum	Semicuruilineum

ROMAE,
Apud Bartholomæum Zannettum. M. DC. X.

SVPERIORVM PERMISSV.

Typographus amico Lectori.

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